Annual AVMA Meeting
Detroit, Michigan
August 20-24, 1961

# Journal

OF THE

## AMERICAN VETERINARY MEDICAL ASSOCIATION

### *Elbow Dysplasia in the Dog*

A PRELIMINARY REPORT on this condition, probably heritable, in the dog. Page 295

### *Canine Distemper Immunization*

STUDIES on the effectiveness of a 1- and 2-dose vaccination program. Page 298

### *Breaks Following Vaccination with Hog Cholera Vaccines*

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### *Relative Value Studies*

STUDIES of numerical designations which express the relationship of the value of one professional service to another and how these values are translated into fees. Page 332

Vol. 138 March 15, 1961 No. 6

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Journal

OF THE
AMERICAN VETERINARY
MEDICAL ASSOCIATION

Vol. 138 No. 6 March 15, 1961

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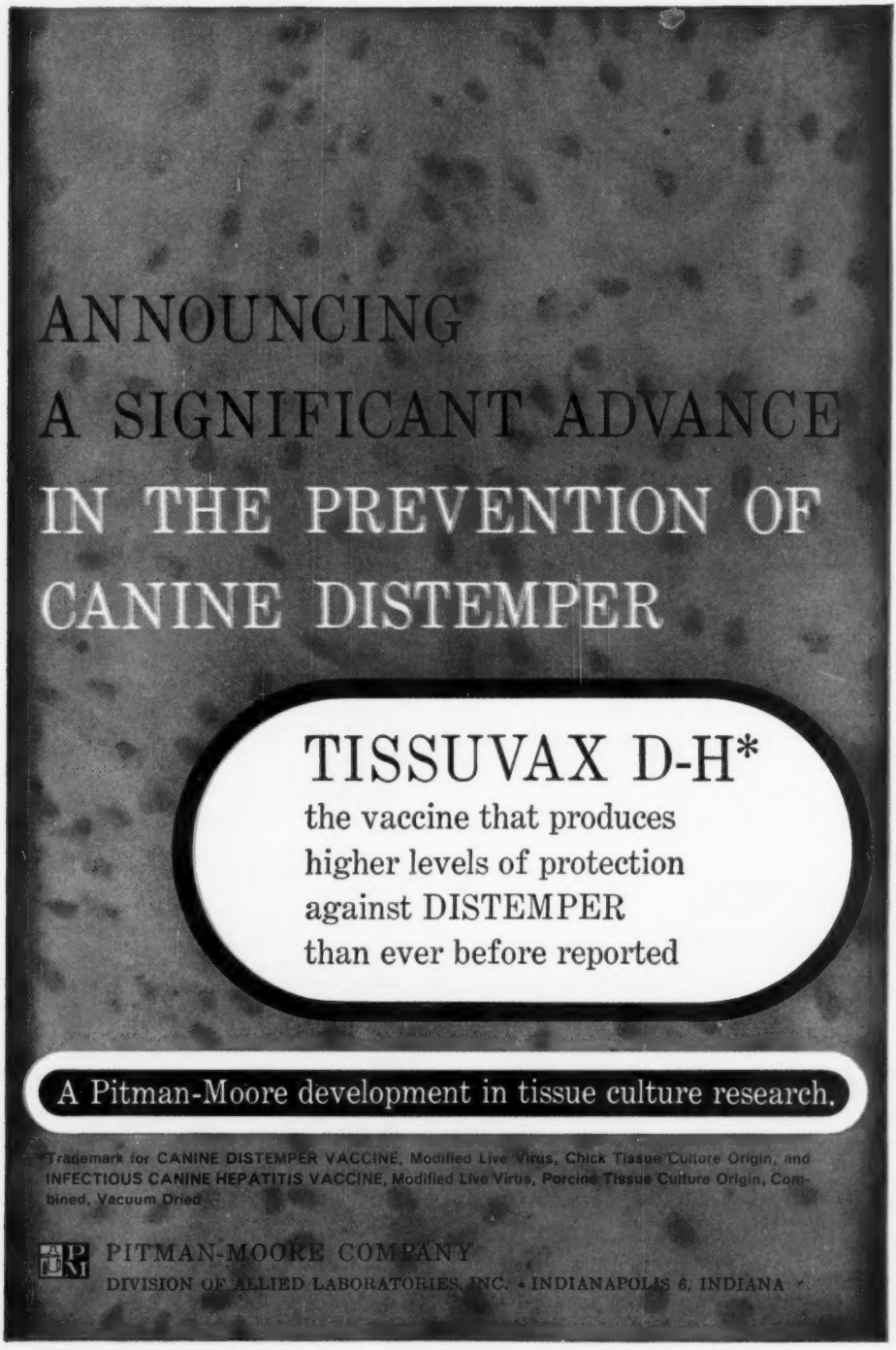
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# Correspondence

**Staphylococcic Infection**

Feb. 9, 1961

Dear Sir:

The case report by Robert E. Richter appearing in the February 1 issue of the JOURNAL, and entitled "Pharyngitis Associated with Pyometra in a Dog" was interesting, but unfortunately incomplete.

I recently treated a 1½ year old female German Short-Haired Pointer with a generalized Staphylococcic infection. Hemolytic, coagulase-positive staphylococci were successfully cultured from a pustular lesion on the lip, as well as from the throat, urine, and stool. Regional lymph nodes were enlarged.

The infection, which had been refractory to antibiotic therapy, was responding nicely to treatment with staph toxoid (Parlam) when a purulent metritis developed. An ovariohysterectomy was performed and the uterine contents were cultured. A hemolytic, coagulase-positive Staphylococcus was found.

It has not been uncommon, in my experience, to find staphylococci distributed throughout the body following establishment of infection. I would suspect that had Dr. Richter cultured the pharynx and uterine contents, he would have found the same organism, and probably a Staphylococcus.

s/EDWARD BAKER, V.M.D.
Grand Animal Hospital
568 Grand Ave.
Englewood, N. J.


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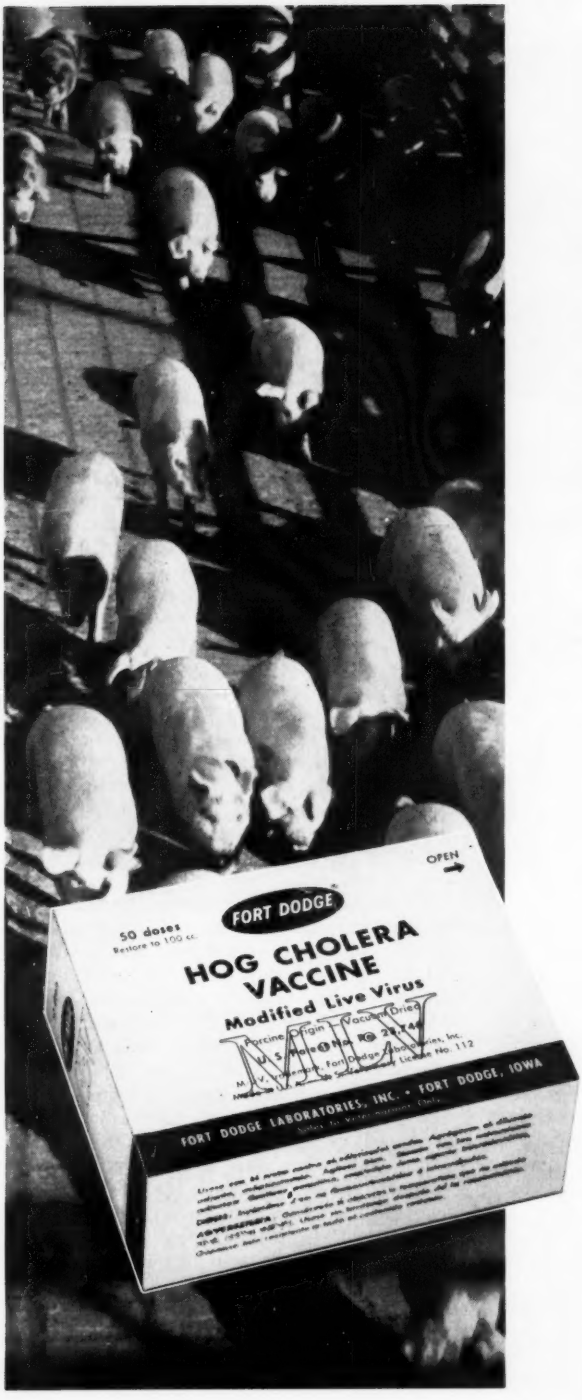


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# Group Veterinary Practice

Dr. Mark L. Morris,
President-Elect

I am frequently asked if it is permissible and practical for a group of veterinarians to pool their skills and resources and form a group practice or partnership.

My answer usually is a qualified, "Yes." I may advocate the formation of a group practice by individual practitioners if the members, before starting such a venture, are fully aware of the legal, technical, and professional ramifications. From my personal experience in practice, I can mention certain fundamental problems for which a definite solution must be found if the group is to function successfully.

1) The first step by any group of veterinarians contemplating such an organization is to consult a lawyer to develop a suitable contract. State laws concerning the structure, function, and tax status of partnerships or business groups vary, and the experience of one group practice may not be applicable in another state.

2) The financial success of the group will depend to a considerable degree upon the services of an experienced business manager. He should be a salaried layman and must not have invested in the enterprise.

3) It is desirable that the participants invest an equal amount of capital.

4) Professional personnel should be compensated according to income from the type of service rendered. A veterinarian, for example, capable of rendering specialized services is entitled to compensation at a different rate from that of those engaged in the handling of routine cases.

These seem to be some of the fundamental problems of developing and operating a group practice. Expert advice should be sought and agreements reached before the venture is undertaken.

Veterinarians should be aware of the problems a group practice presents but should also be cognizant of the many distinct advantages. At present, a difficult problem facing the profession may be solved as the trend toward group practices becomes more firmly established.

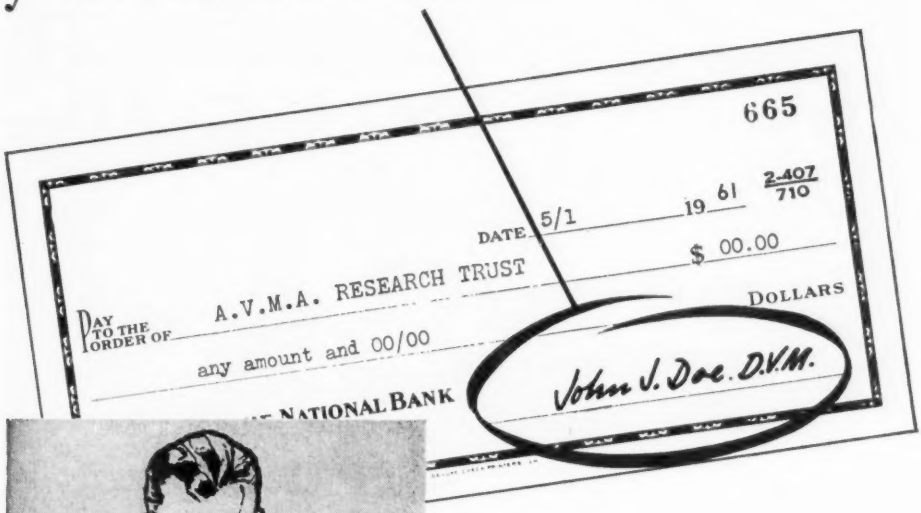
For the recent veterinary graduate, that period between graduation and firm, successful establishment in practice is often filled with frustration, disillusionment, and discouragement. At college he was trained in an environment of attractive surroundings. He had an opportunity to use modern equipment, adequate facilities, and scientific techniques in the practice of veterinary medicine.

Upon entering the field of practice, his world all too often changes radically. He usually has the responsibilities of a family man. His financial resources are often limited or lacking. These conditions frequently lead to the establishment of a practice in a low-rental area in a questionable neighborhood. The basement of the house or garage is often used for housing animals. Laboratory facilities, personnel, and equipment used in college are no longer available. To earn a living, it is easy to become accustomed to makeshift operations. Methods of diagnosis and treatment not in keeping with modern standards of veterinary medicine are often employed. Habits difficult to change are developed. These well-trained, intelligent veterinarians sometimes become a liability to the profession. Frequently they give up altogether and try something else.

These young practitioners could be absorbed into the profession more efficiently by the opportunities a group practice provides. Practices so organized could hire young, inexperienced veterinarians and make available to them the modern facilities to which they were accustomed in their college years. In such a group practice, they could become more knowledgeable from working with the older, more experienced colleagues. They could develop their inclinations and aptitudes toward a specialty. They would be free, if not of economic worries, at least of economic desperation. In short, their development into essential assets to their profession, their clients, and the public, would be accelerated.

Mark L. Morris

# your name here



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# news from Washington . . .

FROM THE AVMA WASHINGTON OFFICE
J. A. McCallam, VMD
Brig. Gen. USA (Ret.)

**Senior Students Should Submit Commission Applications**

General Russell McNellis urges senior veterinary students who are interested in receiving reserve commissions and active duty in the Army Veterinary Corps to submit their applications *without delay*. Several weeks are required to process the applications. Those seniors filing early and whose applications are approved, will be assured of being called to duty soon after graduation. In the event all the space should be filled, late applicants, vulnerable to the draft, might be inducted as enlisted men and could not be transferred to a commissioned status, until spaces become available (see JOURNAL Jan. 15, 1961, adv. p. 12).

**The following bills have been introduced in Congress:**

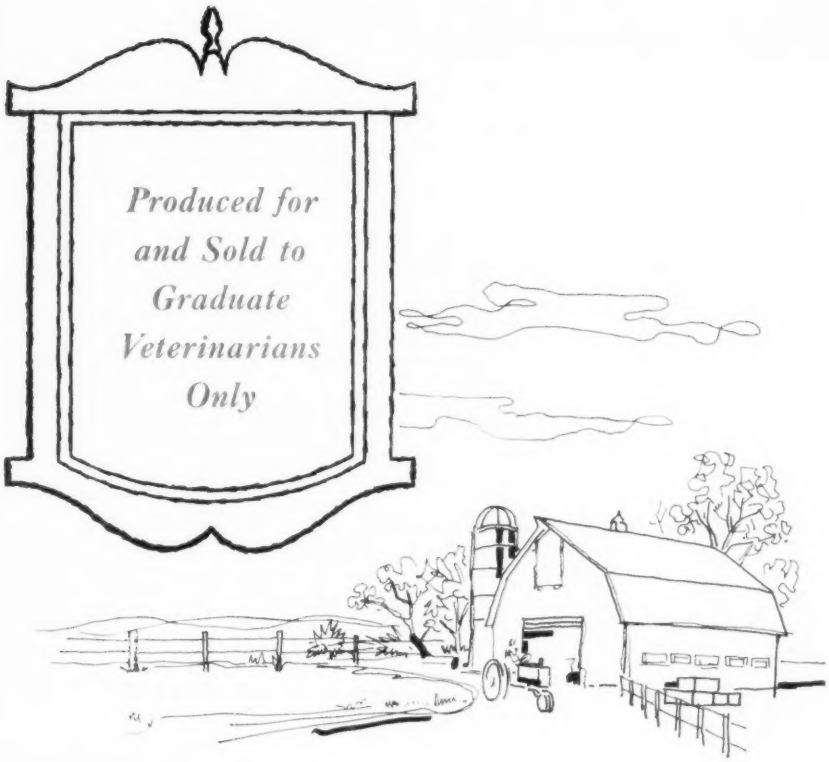
**Health Insurance**

The administration health insurance proposal (elder care) has been introduced in both Houses: *H.R. 4222*, Rep. King (D., Calif.), and *S. 909*, Sen. Anderson (D., N. M.). Measure provides for (1) inpatient hospital services for up to 90 days, subject to deductible amount, paid by patient, of $10 a day up to 9 days, with minimum of $20; (2) nursing home services immediately following release from hospital, up to 180 days; (3) outpatient clinic diagnostic services, as required, subject to a $20 deductible for each diagnostic study; (4) home health service, probably up to 240 visits during calendar year. Such services provided to persons age 65 and over and entitled to monthly benefits under OASDI (social security) program. Program would be financed by increase in Social Security payroll tax — ¼ % on employee and employer, with ⅜ % on self-employed, and taxing first $5,000 annual income, instead of $4,800, as now. If proposal enacted this year, taxable earning base increase would begin Jan. 1, 1962, and tax rate increased Jan. 1, 1963. Present social security tax is scheduled to increase to 3½ % on Jan. 1, 1963, and proposed increases cited would be additional.

**Livestock and Poultry Diseases**

Sen. Humphrey (D., Minn.), introduced *S. 860*, bill to provide greater protection against introduction and dissemination of livestock and poultry diseases. Companion measure is *H. R. 3693* (see JOURNAL March 1, 1961, adv. p. 16). The bills would give Secretary of Agriculture authority, not

*(Continued on adv. page 12)*

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**Food Additives**

*S. 947,* Sen. Hill (D., Ala.)—To amend the transitional provisions of act approved Sept. 6, 1958, an act to protect the public health by amending the federal Food, Drug, and Cosmetic Act to prohibit the use in food of additives which have not been adequately tested to establish their safety. Pertains to subsection (C), section 6 of *Food Additives Amendment* of 1958 *(P.L. 85-929)* and paragraph (b) of section 6, Nematocide, Plant Regulator, Defolient, and Desiccant Amendment of 1959 *(P.L. 86-139).*

**National Peace Agency**

*H.R. 3186,* Rep. Kastenmeier (D., Wis.)—To create a National Peace Agency and prescribe its functions. Its purpose is to apply technical, scientific, scholarly, and educational resources to problems of promoting peace by eliminating or reducing the economic, political, and other causes of war, and achieving peace through disarmament under international control and inspection. Numerous identical bills have been introduced in the House.

**Import Quotas**

*S. 876,* Sen. McGee and Hickey (D., Wyo.)—To provide tariff import quotas on sheep, lambs, mutton, and lamb.

**Import Duties**

*H.R. 4245,* Rep. Harrison (R., Wyo.)—To impose additional duties on excess imports of certain live animals, meats, and meat products.

**Generic Name of Drugs**

*H.R. 3747,* Rep. Dingell (D., Mich.)—To amend Federal Trade Commission Act to require an advertisement of a chemical compound dispensed on prescription as a drug under a trademark, brand, or trade name must include the generic name, otherwise it would be deemed misleading.

**Regulation of Habit-forming Drugs**

*H.R. 3967,* Rep. Denton (D., Ind.)—To protect public health by regulating manufacture, compounding, distribution, and possession of habit-forming barbiturate and amphetamine drugs.

**Research Contributions**

*H.R. 3162,* Rep. Curtis (R., Mo.)—To amend internal revenue code of 1954 to encourage basic research in science by allowing tax credit for contributions and other expenditures for basic research in science.

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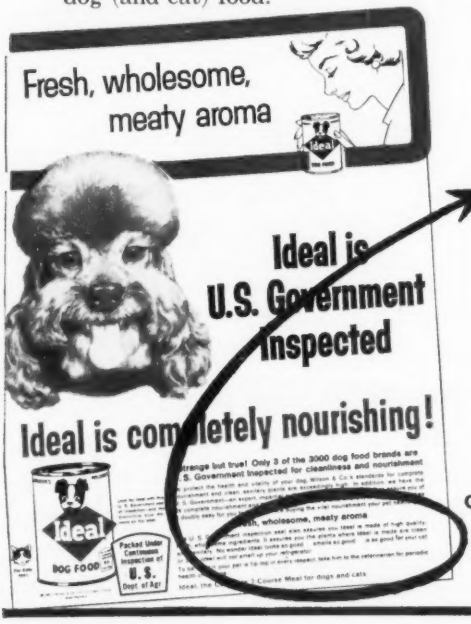


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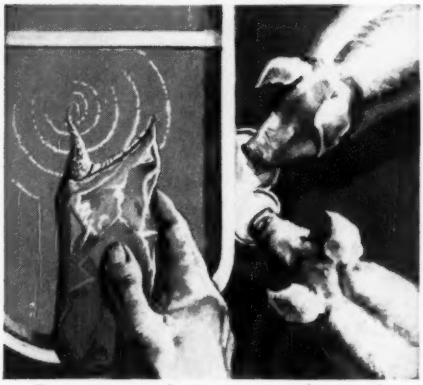

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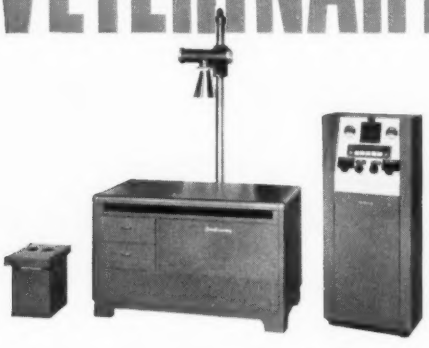

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# Elbow Dysplasia in the Dog

*A Preliminary Report*

WILLIAM D. CARLSON, D.V.M., PH.D.
GLEN A. SEVERIN, D.V.M.

A DEVELOPMENTAL anomaly of the elbow joint has recently been recognized in the dog. It has been variously described as "ununited anconal process"[1] and "ectopic sesamoid bones."[4] The term "elbow dysplasia" more adequately describes the syndrome involving the entire elbow joint. It is a matter of conjecture as to the 1st sign observed. It cannot be definitely stated that the ununited anconal process does or does not initiate the syndrome. Usually, the ununited anconal process is dramatically evident; however, it accounts for only a part of the changes that occur. The entire proximal end of both the ulna and radius and the distal end of the humerus may have changes. This terminology also follows that established for a similar condition involving the hip joint, "hip dysplasia." Extensive hypertrophic degenerative arthritic (osteoarthritis) changes develop early from this developmental syndrome.

This anomaly was diagnosed in 11 German Shepherd Dogs at Colorado State University prior to July 1, 1960. It was first observed at this clinic in an 11-month-old male in 1954 and was seen a second time in 1955 in a 5-month-old female. Between Jan. 1, 1957, and July 1, 1960, 9 additional dogs with this condition were examined; some of these were progeny of affected parents, whereas others were more distantly related (Table 1). In the experience of the authors, this condition has been found only in German Shepherd Dogs.

Clinical signs have been observed in dogs as young as 5 months of age. Consistent clinical signs are gross enlargement of the elbow and lameness. In many cases, crepitation is detected within the joint. The joint capsule is sometimes distended. Early in the disease there may be severe lameness; as the disease progresses the joint becomes less painful. After exercise, the lameness temporarily becomes more pronounced.

Radiographically the condition manifests itself in several ways. It can be either unilateral or bilateral. Usually the anconal process is not united; however, changes have been seen in the elbow joints without separation of the anconal process (Fig. 1). Often there is marked abnormal proliferation of abnormal new bone surrounding the joint margin (Fig. 2). Occasionally there are free radiopaque bodies within the joint, possibly arising from the marginal osteophytes. There is usually a slight malformation of the distal humerus and proximal radius and ulna with various degrees of osteoporosis (Fig. 2). The joint space may vary in thickness, indicating articular carti-

From Colorado State University, Fort Collins, Colo.

Fig. 1—Bilateral occurrence of elbow dysplasia in a 7½-month-old German Shepherd Dog. There are secondary osteoarthritic changes present (arrows). The anconal processes are united (1) but rough and irregular in outline.

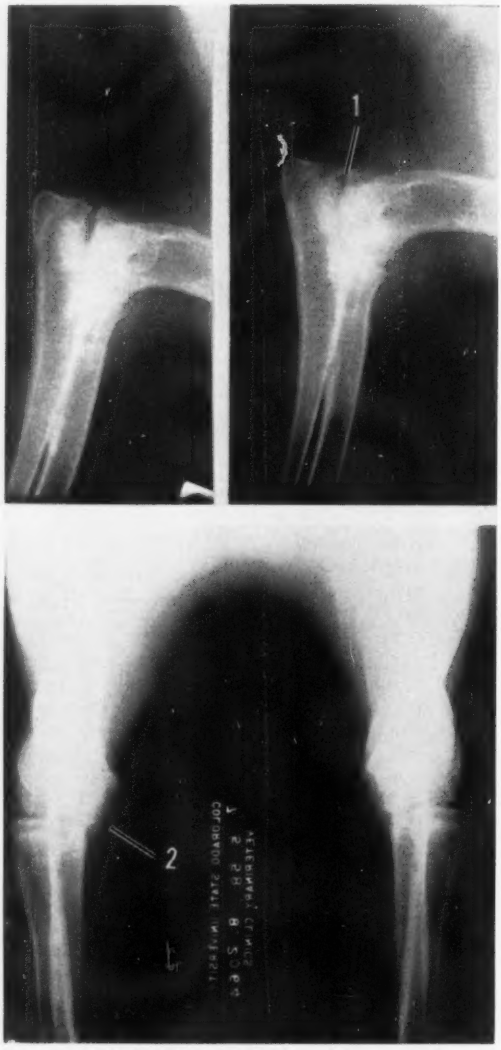


Fig. 2—Typical elbow dysplasia with ununited anconal processes (1). There is extensive lipping of the joint margins on the medial aspect with free interarticular radiopaque bodies present (2). Malformation of the proximal end of the radius and distal end of the humerus is evident. Osteoporosis of both elbow joints is present.

lage involvement. Radiographically, as the condition progresses, the aforementioned lesions develop which closely resemble the hypertrophic degenerative arthritis (osteoarthritis) seen in a dysplastic hip joint. Because there is evidence that the condition is transmitted from one generation to the next (Table 1), hereditary involvement is probable.

An experimental breeding program using affected dogs is being conducted at Colorado State University to determine the mode of genetic transmission.* This will be com-

*The study is supported by the Mark L. Morris Animal Foundation.

**TABLE 1—Abridged History of 11 German Shepherd Dogs with Elbow Dysplasia**

| Dog No. | Sex | Age at time of 1st examination | Elbow affected | Genetic relationship |
|---|---|---|---|---|
| 1 | M | 11 months | Right and left | .... |
| 2 | F | 5 months | Right | Dam of dogs 3 and 4; sister of dog 11 |
| 3 | M | 7½ months | Right and left | Son of dog 2; brother of dog 4 |
| 4 | M | 7½ months | Right and left | Son of dog 2; brother of dog 3 |
| 5 | M | 3 years | Left | .... |
| 6 | M | 10 months | Right | .... |
| 7 | M | 11 months | Right | .... |
| 8 | F | 14 months | Right | .... |
| 9 | M | 1 year | Right and left | Son of dog 10 |
| 10 | M | 5 years | Right and left | Sire of dog 9; son of littermate of dogs 2 and 11. |
| 11 | F | 5 years | Right | Sister of dog 2 |

pared with similar studies in hip dysplasia.[2,3] Radiologic and pathologic changes will also be observed and recorded continuously as the dogs develop.


#### Summary

Eleven cases of abnormal development of the elbow joint have been found in German Shepherd Dogs. The name, "elbow dysplasia," is suggested as the most suitable terminology for this condition. Six dogs with the condition were closely related genetically, which strongly suggests that the syndrome is inherited.


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## Fats in Dog Feeds Useful in Proper Amounts

When 4, 6, or 8% of fat was added to the basal diet, or when 6% fat was added to a commercial meal, and then fed to Cocker Spaniel pups, the rates of gain for a 10-week period were equal or slightly superior to those obtained when diets without added fat were fed.

The mothers, when fed dry rations containing 4% added fat, maintained excellent condition, reproductive capacity, and lactating ability. Those fed rations with 8% added fat lost in reproductive capacity, as judged by the number of pups dead 24 hours after birth and the weight of pups at birth. The average rate of gain of weight of pups from mothers fed 4% of added fat was highest of all groups.

In a study involving mixed groups of Beagle, Shepherd, and Shepherd-Collie pups, food efficiency was found to be distinctly superior when rations containing 30% fat were fed. In growing dogs, a ration having a high fat content may be used if other nutrients, particularly proteins and amino acids, are present in adequate amounts. In another study, young pups were found to be extremely sensitive to a fat-deficient diet. On a diet containing only 0.9% of fat, pups developed dry coats, flaking skin, loss of hair, and edema. These deficiency signs are presumed to be due to a lack of linoleic and arachidonic acids.—*Util. of Fats in Poultry and Other Livestock Feeds, Util. Res. Rep. No. 2, USDA (Aug., 1960): 30.*

# Canine Distemper Immunization

## *Studies on Effectiveness of a 1- and 2-Dose Vaccination Program*

CHARLES J. YORK, D.V.M, PH.D.
GEORGE R. BURCH, D.V.M.

ALTHOUGH immunization against canine distemper in the field has presented a number of difficulties, information published during the past few years places knowledge concerning the prevention of this disease on a firmer basis. For example, although it had been generally believed that most dogs experienced distemper infection during their first year, it was found by a survey in 1955[5] that exposure varied considerably among urban and rural dogs, and urban dogs often developed neutralizing antibodies to distemper at an early age. Information such as this added impetus to the trend toward vaccinating pups when a few weeks old to provide protection before exposure to virulent distemper virus occurred. This practice undoubtedly contributed to a number of immunologic failures, for it was shown later[3,6] that the presence of excessive passive antibodies from colostrum, or from administration of immune serum, interfered with the immunizing ability of distemper vaccines and even that of live virulent virus.

After the duration of colostral antibody interference in pups was shown[4] to have a direct relationship to the serum antibody level of the bitch at the time of whelping, a nomograph system was developed,[1] whereby a serologic test of the bitch's serum could be used to predict the age at which a pup should be vaccinated. The nomograph procedure has not yet been widely adopted by veterinarians, in part because of the time and expense involved, although most recognize the desirability of vaccinating pups at the earliest age which the loss of passive immunity will permit.

In order to avoid immunologic failures due to passive maternal antibodies, it was suggested[7] on the basis of laboratory studies that dogs should be vaccinated at 7 weeks, and again at 9 weeks of age. Since it has been shown[2] that approximately 15% of dogs routinely vaccinated at 9 weeks of age did not develop immunity, the need for using either a nomograph system or a 2-dose vaccination program for pups is emphasized.

In order to obtain more definitive information on distemper prophylaxis in the field, studies were carried out in this laboratory in cooperation with practicing veterinarians during field trials of a recently developed modified live-virus tissue culture distemper vaccine.[8] In addition to evaluation of the vaccine, these tests made it possible to determine the immunologic status of dogs as they were presented for vaccination at 17 veterinary hospitals. Specific information was obtained on the immunologic results that may be expected, using a 1- or 2-dose tissue culture-modified live-virus vaccination program in veterinary practice. Results of this study are presented in this report.

### Method of Study

The ages and histories of dogs vaccinated during this study were obtained by cooperating veterinarians. A blood serum sample was taken from each dog, followed immediately by administration of 1.0 ml. of chicken embryo tissue culture distemper vaccine. Another serum sample was obtained from the same dog 3 to 4 weeks later. In some cases, dogs vaccinated at less than 10 weeks of age were revaccinated at the same time the second serum sample was collected, and a serum sample was obtained for the third time 3 weeks after the second vaccination. All serums were tested for distemper antibodies by a serum-neutralization test previously described.[8]

Based on experience, dogs were arbitrarily con-

From the Research Division, Pitman-Moore Co., Division of Allied Laboratories, Indianapolis, Ind.

The authors gratefully acknowledge the assistance of the 17 veterinarians in 7 states who cooperated in obtaining the data for this study.

**TABLE 1—Age Distribution of Dogs Vaccinated on Random Basis in Field Trials at 17 Veterinary Hospitals**

| Age | No. of dogs | % |
|---|---|---|
| 7-10 weeks | 75 | 34.1 |
| 10-12 weeks | 65 | 29.5 |
| 13-16 weeks | 32 | 14.5 |
| 5-8 months | 30 | 13.6 |
| Over 8 months | 15 | 6.8 |
| Age not given | 3 | 1.5 |
| | 220 | 100.0 |

sidered immune to distemper if they developed a serum titer greater than 1:100/0.05 ml. of serum, but of those developing antibodies after vaccination in these tests, only a few had titers less than 1:500, and these ranged from 1:160 to 1:320. The average immunologic response for all dogs was in the 1:100,000 range.

### Results

*Serologic Survey.*—The immunologic status of dogs at the time they were brought to veterinarians for vaccination was determined from the prevaccinal serum samples. The passively and actively immune dogs were differentiated on the basis of their ages and their serum titers. The dogs ranged in age from 5 weeks to over 1 year, but most were in the 9- to 16-week age group (Table 1). In a summary of the results of the immunologic survey (Table 2), 13.6% of the dogs vaccinated were already immune when brought to veterinary hospitals, undoubtedly due to previous exposure to "street" virus. The ages of these immune dogs varied widely, and such dogs were not restricted to the older groups. The dogs actually in need of vaccination were the 23.2% that possessed varying amounts of maternal passive immunity, and the 63.2% with no serum titer.

**TABLE 2—Distemper Immunity Status* of Field Trial Dogs at Time of Vaccination**

| Status | No. of dogs | % |
|---|---|---|
| Colostral passive immunity | 51 | 23.2 |
| Serologically negative | 139 | 63.2 |
| Active immunity | 30 | 13.6 |
| Total | 220 | 100.0 |

*Determined from paired serum samples.

*Vaccination of Dogs (1-Dose Vaccination Schedule).*—Although these survey data provide a general idea of the immunologic status that might be expected in dogs presented for vaccination, unfortunately there is no way to determine the status of individual animals prior to vaccination unless a serologic test is conducted; therefore, all dogs in the field trial were routinely vaccinated. The antibody test results were known prior to vaccination for the laboratory dogs only. The results (Table 3) cover a total of 260 dogs—220 in the field and 40 in the laboratory. As may be seen in the table, the laboratory dogs were included only in the serologically negative group. Of the 30 dogs immune at the time of vaccination, 75% had a pronounced rise in titer (booster) of 2 logs or greater. Of dogs needing vaccination, including those with and without colostral passive antibodies, only 88% became immune. In dogs under 10 weeks of age, the lack of response was more pronounced, and only 83.4% became immune. However, in serologically negative dogs, 96.5% had a satisfactory immune response to vaccination with the tissue culture vaccine.

*Vaccination (2-Dose Vaccination Program in Dogs Less than 10 Weeks Old).*—The majority of serologically negative dogs of all ages respond well immunologically to vaccination, but results in young dogs were poor, probably due to virus interference from excessive maternal immunity. In an effort to develop a program which would produce immunity in a higher percentage of young dogs, tests were carried out at-

**TABLE 3—Immune Response of 220 Dogs Randomly Vaccinated in Field Study and 40 Laboratory Dogs to 1 Dose of Tissue Culture Vaccine**

| Group | Status at time of vaccination | No. of dogs vaccinated | Dogs responding* No. | % |
|---|---|---|---|---|
| 1) Field dogs only. | | | | |
| a) Actively immune. | | 30 | 22** | 75.0 |
| b) With and without passive immunity. | | | | |
| | 10 wk. old or less. | 102 | 65 | 83.4 |
| | Older than 10 wk. | 88 | 83 | 94.3 |
| | All ages combined. | 190 | 167 | 88.0 |
| 2) Field and laboratory dogs, serologically negative (139 field dogs, 40 laboratory dogs). | | 179 | 173 | 96.5 |

*Arbitrarily based on antibody titer if greater than 1:100/0.05 ml. of serum. **Increase in active titer.

**TABLE 4—Immune Response of Pups Following 1 or 2 Vaccinations with Tissue Culture Canine Distemper Vaccine**

| Age in weeks | Passive immunity | Immune titer* after 1 vaccination | Immune titer* after 2 vaccinations |
|---|---|---|---|
| 5 | 0/1** | 1/1 | 1/1 |
| 6 | 1/1 | 0/1 | 1/1 |
| 7 | 4/8 | 6/8 | 2/2 |
| 8 | 10/27 | 26/27 | 18/18 |
| 9 | 19/32 | 24/32† | 22/23† |
| 10 | 10/33 | 28/33 | 10/10 |
| Totals | 44/102 | 85/102 | 54/55‡ |
| % | 43.1 | 83.4 | 98.1 |

*Titer from 1:160 to 1:1,000,000/0.05 ml. when tested against approximately 100 $EID_{50}$ of virus.

**Numerator indicates number reacting; denominator = number tested.

†Two serologically negative dogs did not respond immunologically to one vaccination; one of these did not respond to a 2nd vaccination.

‡Eleven (20%) of these 55 dogs were not immune after the 1st vaccination.

tempting to vaccinate pups at 9 weeks of age and again 3 weeks later. In actual practice during this study, vaccinated dogs ranged from 5 to 10 weeks of age, although most were in the 8- to 10-week-old group. The interval between vaccinations varied from 3 to 4 weeks. Of 102 dogs vaccinated once at less than 10 weeks of age, only 83.4% became immune (Table 4). However, 55 of these dogs which were vaccinated a second time had a 98.1% immune response.

Not all dogs with passive immunity fail to respond immunologically to vaccination. An analysis of the serum titers of 51 dogs possessing passive immunity is given (Table 5). It can be seen that failure of

**TABLE 5—Influence of Various Levels of Passive Antibody Titers on Development of Active Immunity in Dogs After a Single Dose of Tissue Culture Canine Distemper Vaccine**

| Passive antibody serum titer | No. of dogs | No. failing to develop immunity |
|---|---|---|
| 1:10 | 10 | 0 |
| 1:20 | 12 | 1 |
| 1:32 | 17 | 4 |
| 1:63 | 5 | 4 |
| 1:100 or greater | 7 | 7 |

dogs to develop active immunity regularly occurred in those in which passive antibody titers were 1:100 or greater. However, failure to develop immunity occurred in some dogs with passive immune titers as low as 1:20.

#### Discussion

Several aspects must be considered in formulating a program for canine distemper prophylaxis using a live-virus vaccine. Foremost among these is the requirement that dogs be vaccinated when they have little or no passive immunity, in order to prevent interference in the development of active immunity. In this study, it was demonstrated that when an effective tissue culture-modified live-virus vaccine[8] was given only to serologically negative dogs, 96.5 to 97.0% were immunized. Thus, even with serologically negative dogs, one may expect a lack of immune response in 3 to 4%. When dogs are vaccinated without selection, *i.e.*, those with passive immunity as well as those serologically negative, a lack of immune response of about 12 to 17% may be anticipated. In practice, however, delaying vaccination until dogs have reached an age at which most have lost passive immunity only increases the risk of infection with virulent virus prior to vaccination. Eighty to 85% of pups are ready to be vaccinated at 8 to 9 weeks of age. If a program is followed for young pups whereby one vaccination is given at approximately 9 weeks of age (to immunize those serologically ready at that time), and another vaccination is given at about 12 weeks of age, then a high degree of success (98%) could be obtained. Only a single dose of vaccine would be required for most dogs over 12 weeks old at the time of initial vaccination.

#### Summary

A tissue culture-modified live-virus canine distemper vaccine was used in a study with 220 field dogs and 40 laboratory dogs. Dogs responded immunologically to 1 or 2 doses of the vaccine as follows:

1) One dose of vaccine in dogs without passive immunity gave an immune response in 96.5%.

2) One dose of vaccine used in dogs of all ages without consideration of possible passive immunity gave an immune response in 88%.

3) Interference due to passive immunity occurred primarily in dogs less than 12 weeks of age.

4) One dose of vaccine in dogs 10 weeks of age or less gave an immune response in 83.4%.

5) Two doses of vaccine, one at approximately 9 weeks of age, and the other at approximately 12 weeks of age, gave an immune response in 98.1%.

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## Transmission of Hepatitis Virus in Rabies Vaccine Disproved

In dogs, illness associated with prophylactic vaccination against rabies was shown to have been due to the virus of infectious canine hepatitis. The virus was recovered by inoculation of monolayer cell cultures of dog kidney with suspensions of tissues from sick dogs.

There were 3 incriminated lots of low egg passage, Flury strain virus vaccine. However, none contained demonstrable hepatitis virus.

The occurrence of hepatitis was attributed to infected dogs among the large numbers that were vaccinated at the various rabies clinics.—*Am. J. Pub. Health, 50, (Oct., 1960): 1582.*

## Intrapleural Injection of Anesthetic Reported

In a study of 51 dogs, good anesthetic results were obtained with a 10% barbiturate solution injected into the lung through the 7th and 8th intercostal spaces. Larger doses of barbiturates (over 40 mg./kg. of body wt.) were used and were often followed by narcosis lasting several hours. The resulting lung lesions were confined to an area 2 by 12 mm. After 10 to 12 days the lesions healed with a small scar. This type of anesthesia was considered suitable for healthy dogs which were difficult to restrain for an intravenous injection.—*Med. Wet. Warszawa, 16, (1960): 209; abstr. in Vet. Bull. (Oct., 1960): item 3394.*

[ED. NOTE.—Readers are cautioned to notice that this procedure was considered by the authors to be suitable for dogs difficult to restrain. The intrapleural injection of anesthetic solutions routinely, in animals not especially difficult to restrain, would be questioned by most authorities.]

# Hourglass Extradural Lipoma in a Dog

BERIT FUNKQUIST

EXTRADURAL spinal tumors may be divided into 3 topographic classes: (1) para- and intervertebral tumors which encroach upon the epidural space, (2) vertebral tumors which extend to the epidural space, and (3) tumors originating within the epidural space.[5] To these 3 classes may be added a 4th, the hourglass tumor, which does not represent a topographic or histologic entity, but a varying combination of the other 3 classes.

Hourglass tumors are generally clinically and histologically benign and encapsulated, such as neurinomas or lipomas, and consist of an extraspinal and an intraspinal portion united by a stalk. In typical specimens, this stalk occupies the intervertebral foramen or the space between the vertebral arches. Through expansive growth, the intraspinal portion of an hourglass tumor, as well as other benign epidural tumors, can excavate the vertebral body or compress the spinal cord and produce pain and functional deficiency. If the tumor grows slowly, the spinal cord often can adapt itself to the intrusion of the tumor to a certain extent without clinical signs becoming apparent. In man, it has often been observed that a dilatation of the spinal canal is evident radiologically before compression of the spinal cord has produced irreparable damage and clinical signs.[12]

Intraspinal tumors can be diagnosed on the basis of neurologic and radiologic findings.[9,12] Neurologic signs sufficient for diagnosis, however, usually represent such a late stage of neutral compression that irreversible damage has already occurred.[14] To excise an intraspinal tumor, laminectomy has been performed successfully in man. In instances of hourglass tumors, the extraspinal portion and connecting stalk must also be exposed and removed.[4,6]

According to one report,[5] about 30 extradural spinal lipomas have been observed in man. A number of these were observed incidentally at autopsy, but some had produced clinical signs of compression. Five or 6 of these were hourglass lipomas. In veterinary literature, reports on spinal tumors are few. An extradural spinal lipoma producing paresis in a cow was described in 1901.[1] In necropsies on dogs with clinical signs of medullary compression, one hourglass neuroblastoma was seen.[10] Since such lipomas in animals are not known to have been described, the following description of an hourglass lipoma localized *intra vitam* by myelography may be of interest.

### Technique for Radiologic Diagnosis

The hourglass lipoma described here was seen in the course of investigations in dogs using subarachnoid myelography with a water-soluble contrast medium. It has been shown[2] that water-soluble contrast medium can be introduced into the lumbar and thoracic portions of the subarachnoid space in dogs for the diagnosis of spinal cord compression. Later investigations conducted by the author have shown that the same medium can be used for myelography of the cervical and the anterior-thoracic portions of the spinal cord. The technique is described briefly.

Pitkin needles, 0.9 and 0.7 mm., respectively, are directed into the subarachnoid space in the occipital and lumbar regions while the dog is under thiopental sodium anesthesia. Complete muscle relaxation is induced with succinylcholine chloride, and artificial respiration is maintained by rhythmical insufflation of oxygen and nitrous oxide (1:4). The dog is then placed on its side and the hindquarters elevated about 30 degrees. When the flow of spinal fluid from the needle in the occipital region has ceased or subsided to a constant rate of only a few drops per minute, 0.3 ml./kg. of body weight of a 20% water-soluble contrast medium containing 1 mg. of lidocaine hydrochloride per milliliter of medium is injected into the lumbar region. Immediately after the injection, a lateral radiograph is taken of the cervical and an-

From the Department of Surgery, Royal Veterinary College, Stockholm, Sweden.

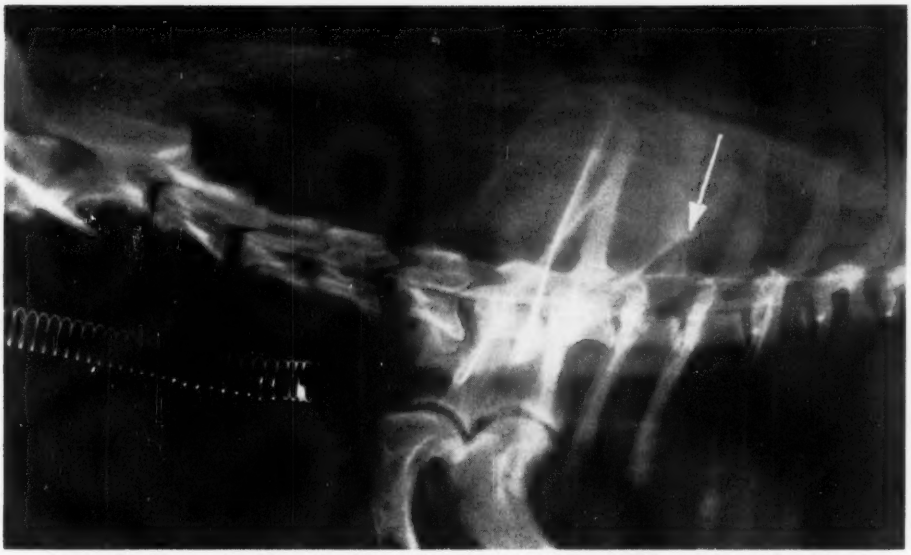

**Fig. 1—Myelogram (lumbar subarachnoid injection of 1.8 ml. of 20% water-soluble contrast medium) of the cervical and anterior thoracic regions in a Pekingese bitch with an hourglass extradural lipoma. The dog is in lateral recumbency. There is poor filling of contrast medium over T2 (arrow). Endotracheal tube is reinforced with a steel spring to prevent obstruction when neck is flexed.**

terior thoracic vertebral column. Another radiograph is made after 30 seconds. The dog is then placed on its abdomen, and a dorsoventral radiograph is made. After the latter radiograph, the forequarters are elevated about 30 degrees. With this technique, myelography of the cervical and anterior thoracic portions can be performed without causing a serious drop in blood pressure or any evident damage to the central nervous system.

#### Case Report

For 3 weeks a Pekingese bitch, 1 year old, had signs of posterior ataxia and whimpered when picked up. When she was examined, a slight paresis of the hindlegs was evident but spinal reflexes were normal. Abnormal sensitivity to palpation was elicited over the posterior portion of the neck, and the dog resented flexion and extension of the neck. An abnormally narrow disk between C4 and C5 was demonstrated radiologically. Since no definite explanation for the clinical signs was evident, cervical subarachnoid myelography was performed in the manner described. On the myelogram, good filling of the subarachnoid space was obtained throughout the entire vertebral canal except in the region of T2 (Fig. 1). At this location, the subarachnoid space

**Fig. 2—Subarachnoid space is displaced to the right over T2 in this myelogram of the cervical and anterior thoracic region of the Pekingese. Dog is in dorsal recumbency.**

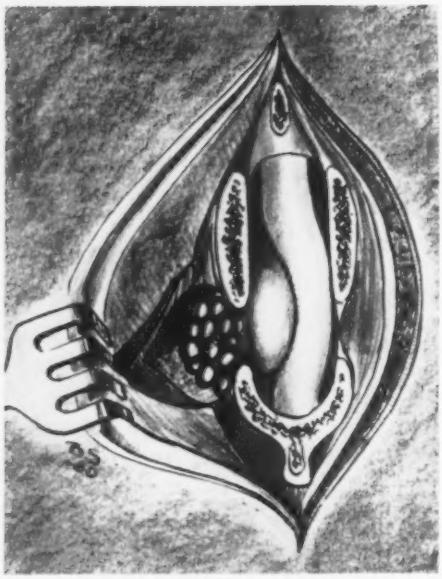

**Fig. 3—Operative field after laminectomy of T2. Immediately to the left of the spinal cord is the intraspinal fusiform portion of the lipoma. To the left of the vertebral column is the extraspinal multinodular portion. The 2 portions are connected by a stalk, hence, the name "hourglass."**

was displaced to the right (Fig. 2). Reduced density was seen in the dorsal 3rd of the T2 vertebral body (Fig. 1).

Laminectomy was performed 5 days after myelography. The bitch was placed on her abdomen for this procedure. The tips of the 1st 4 thoracic spinal processes were clipped off so that the ligamentum nuchae could be displaced without disturbing its continuity. The 1st 3 thoracic spinal processes, the vertebral arch of T2, and the anterior portion of the arch of T3 were removed. The spinal cord was displaced toward the right by a sharply delimited tumor nearly 3 cm. long (Fig. 3).

A soft, poorly delimited tumor, resembling a bunch of grapes, was situated extraspinally and was united with the intraspinal tumor by a narrow stalk passing through the intervertebral foramen between T2 and T3. The nerve roots were embedded in tumor tissue. After exposure, both parts of the tumor and stalk were freed from the dura mater by blunt dissection and removed together with the involved nerve roots. A hollowing out of the dorsal portion of the T2 vertebral body was then evident. The tip of the T4 spinal process was replaced in position and fixed there with stainless steel sutures. On the next day, the bitch could stand and take a few steps; the neck was rigid. Her ability to move improved during the next several days. By postoperation day 10, her movements were nearly normal. Signs of pain could not be produced by flexing or extending the neck or by palpation over the site of operation. On examination 8 months after the operation, no signs related to the tumor or to the operation performed could be recognized.

The tumor was identified histologically as a lipoma surrounded by a thin capsule (Fig. 4).

#### Discussion

In the differential diagnosis of spinal paresis in the dog, epidural tumors should

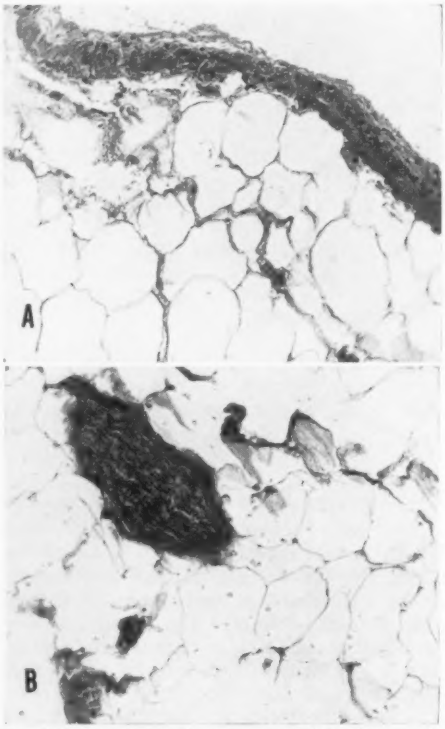


**Fig. 4A—The intraspinal portion of the lipoma is surrounded by a thin connective tissue capsule. B—Central portion of the intraspinal portion of the tumor. The lipoma is traversed by nerve bundles. van Gieson's stain; x 125.**

be considered. The rarity of descriptions of such tumors in veterinary literature probably reflects in part the difficulty of clinical diagnosis of these tumors without myelography.

Laminectomy as a therapeutic approach for relief from spinal cord compression caused by lesions in the epidural space seems to be little practiced in veterinary surgery, judging from the scarcity of reports in veterinary literature. It has been shown that hemilaminectomy can be performed on healthy dogs.[13] For surgical treatment of disk herniation in the dog, hemilaminectomy[3] and hemilaminectomy combined with fenestration of the disk[7] have been recommended. It is difficult from these reports to estimate the therapeutic value of the method described. Laminectomy in the lumbar region of the dog has been described as a trauma sufficient to produce paraplegia even in healthy dogs.[8] The danger of exposing a spinal cord already damaged by disk herniation and inflicting the additional trauma of a hemilaminectomy or laminectomy has been pointed out.[11,15]

The case described in this paper shows that laminectomy on a dog with an extradural lesion producing spinal cord compression can have therapeutic value, at least in the anterior thoracic region.


#### Summary

The presence of spinal cord compression in the anterior thoracic portion of the vertebral column of a dog was diagnosed by subarachnoid myleography, using a water-soluble contrast medium. On surgical exposure, an hourglass lipoma was observed as the cause of the compression. The lipoma was removed, and the patient recovered without complications. The technique for myelography and the technique and the results of surgical treatment are described.


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### Skunk Rabies Predominates in North Dakota

In the 1959-1960 annual report of the North Dakota Livestock Sanitary Board, more cases of rabies were diagnosed in skunks than in all other animals combined. Forty cases were diagnosed in skunks, 15 in cattle, 5 in dogs, 3 in cats, 2 in foxes, and 1 each in a pig, a gopher, and a muskrat.—*53rd and 54th Ann. Rep. North Dakota Livestock San. Bd. to Governor of North Dakota (1959): 10.*

*Cheyletiella parasitovorax*

# Infestation of Pups

CHARLES M. REED, D.V.M

SEVERAL instances of kennel infestation of dogs with the free-living mange mite, *Cheyletiella parasitovorax* (Fig. 1), have been encountered in my veterinary practice.

The mites are similar in size and shape to *Otodectes cynotis*. Three distinct forms, presumably the adults of each sex and the 6-legged larvae, have been identified. There are numerous eggs which are similar to those of the common ear mite. The most striking morphologic characteristic is the large, clawlike mouth parts, the pedipalps.

These mites are a species of the family Cheyletidae and are medium in size, measuring up to 0.8 mm. in length. They have plump, oval, reddish or yellowish bodies, chelicerae that are stylets, and large, pincer-like pedipalps. They are parasitic on rabbits and cats and may cause dermatitis in man.

**Fig. 1—The mite, *Cheyletiella parasitovorax*, taken from an infested pup. x 60.**

### Case Report 1

In November, 1959, a black Toy Poodle, 6 weeks old, was brought for routine physical examination. It had just been purchased from a kennel and had not been to the new owner's home.

Many small, white objects were observed near the base of the dog's otherwise clean shiny hair, particularly in the dorsal lumbosacral region. These objects resembled nits of lice, except that they were much smaller.

The skin was examined carefully for several minutes. Finally 1 of the mites moved. It was a pale yellow color. A skin scraping, using a drop of mineral oil on a scalpel, was then made and numerous *C. parasitovorax* mites were discovered.

For treatment, an aerosol insecticide was dispensed. The owner later reported giving the dog insecticidal baths as well. The infestation cleared up immediately and has not recurred.

### Case Report 2

In March, 1960, 2 blond Cocker Spaniel pups, 12 weeks old, which belonged to a client who was establishing a kennel (kennel B), were examined. The only apparent abnormality of the skin was excessive scurfiness over the lumbosacral region. The pups were treated for ascarid infestation and for ear mites. The owner was advised that scurfiness in pups is not uncommon and that with good grooming and nutrition, the condition would probably disappear.

A week later, the pups were again examined. One pup had numerous, small, scabby, reddish areas in the skin over the lumbosacral region. Skin scrapings were

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The author thanks Drs. Frank Kral and J. S. Dunlap and Mr. Jordan Lefler, bacteriologist for the Snohomish County Health District, for their assistance, especially Mr. Lefler who provided the photomicrograph.

made, and *C. parasitovorax* mites were found. A shampoo containing thiocyanate* was dispensed, along with an insecticidal dip.** The mites were readily eliminated. These Cocker Spaniel pups were acquired from the kennel of another client (kennel A) several weeks prior to examination. The owner of kennel A was advised of the mite infestation and of the method of treatment. On examination, one male Cocker Spaniel, 2 years old, from kennel A had many nitlike objects similar to those seen on the Toy Poodle described. Many scrapings were made, but no mites were found. In a fecal smear from 1 adult dog from kennel A, a mite was identified microscopically under 100 magnifications.

The owners of kennel A treated all their 40 dogs, and a short time later reported that clinical signs of mites were no longer present. Two mature dogs from kennel A were examined several weeks later prior to sale to another kennel. They appeared normal in all respects and were apparently free from mites.

In August, the owners of kennel A reported an apparent recurrence of the *C. parasitovorax* mite in several litters of young pups. They reported that the owners of another kennel (kennel C) experienced similar infestation in their first 2 litters at about the same time.

Several weeks later, the owners of kennel B brought for examination 11 pups, 4 weeks old, from 2 litters. They were all heavily infested with *C. parasitovorax* and were treated with an insecticide and also for ascarids and ear mites. These pups were not from parents acquired from kennel A.

Ten days later, a few mites were still present on their backs, but were presumed to be dead. Live mites were collected from between their eyes. The 3 pups from one litter were in good health; the 8 pups in the other litter were small, thin, and unthrifty but had good appetites. None of the pups were observed to scratch excessively.

*Thera-Tergent, Warren-Teed Products Co., Columbus, Ohio.

**Malingo, Fort Dodge Laboratories, Fort Dodge, Iowa.

#### Discussion

Observations of the kennels described indicate that kennels may become infested with *C. parasitovorax*. Infestation may be perpetuated by adult dogs which, without noticeable signs, harbor a few mites.

Although this parasite has been found in mature dogs, it occurs, in our limited experience, most commonly in pups. Mites apparently reproduce rapidly on pups. In pups, infestation was readily eliminated by ordinary antiparasitic measures. Probably, maturation of the dogs, along with frequent bathing, has eliminated infestation in many instances without the owner's ever being aware of it.

The problem appears to be greatest in kennels. Gas has been suggested for elimination of kennel infestation.[1]

Infestation might be a factor causing unthrifty pups, or it is possible that unthrifty pups are more severely parasitized than healthy ones.

Though rarely reported, this parasite appears to be much more widespread than is generally realized.

#### Summary

Infestation with *Cheyletiella parasitovorax* mites causes skin irritations in pups and, possibly, in mature dogs. It can be a serious kennel problem. Infestation of individual animals is readily eliminated with ordinary insecticides. Gas has been suggested for elimination of kennel infestation.

[1]Kral, F., Philadelphia, Pa.: Personal communication, 1960.

### Torn Eyelids in Horses Should Be Repaired

If the eyelid of a horse is torn just above the eyelash so that a piece hangs down over the eye, it is advisable to suture it back in place. Otherwise, there will be an ocular discharge for the rest of the horse's life because there is no eyelash to keep out dirt. If the wound is dried out, the surface should be freshened, infiltrated with a local anesthetic, and sutured with a fine needle without penetrating the conjunctiva.—*Canad. Vet. J., 1, (Dec., 1960): 541.*

*A Procedure for*

# Surgical Treatment of Ascites

HENRY J. DEUTSCH, D.V.M.

A MALE, SPANIEL-TYPE dog, 8 years old, was presented for examination in October, 1959. It had been coughing for 2 months. A cardiac disorder was diagnosed, and routine treatment was initiated. However, abdominal enlargement and lethargy developed.

The patient was given digitalis, 0.1 mg. daily, and acetazolamide,* 60 mg. daily. No improvement resulted, and ascitic fluid had to be removed by paracentesis. Aminophylline, 1.5 gr. 3 times daily, was dispensed, and the dosage of acetazolamide was increased to 125 mg. daily.

Two days later, the dog was returned because of vomiting and diarrhea. It was hospitalized for 4 days and treated for gastroenteritis.

One month later, December, 1959, the abdominal distention and lethargy recurred. The dog dragged one hindleg. The ascitic fluid was again removed, and the dog was given vitamin B complex and vitamin $B_{12}$ intramuscularly. Paracentesis was performed twice more that month.

Since treatment by conventional methods did not provide a satisfactory response, I decided to employ surgery.

The surgical procedure was based on experimental operations to reduce artificially induced ascites. In this experimental work, 8 dogs were subjected to ileoentectropy (turning a section of ileum inside out). Accumulation of ascitic fluid either did not recur or recurred in greatly reduced quantities. Only 1 of the 8 required any paracentesis.[1]

Beginning 72 hours prior to abdominal surgery, this dog was periodically given a neomycin preparation to sterilize the bowel. Other medication was discontinued.

Under barbiturate anesthesia and utilizing aseptic techniques, a midline incision was made from the xiphoid process to the penis. Part of the intestine was brought through the incision and a 3-inch section of the ileum was clamped off. The main mesenteric vessels to this section were kept intact. This section was excised, placed aside, and kept moist with sponges saturated with normal saline solution. Anastomosis of the severed ends of the ileum was then performed. The reunited ileum was returned to the abdomen.

The 3-inch, isolated segment was transected through all layers along its antimesenteric border. The mucosal surface was wiped and flushed to remove all food particles. This sheet of flattened intestine with its blood supply intact was sutured to the peritoneum with interrupted sutures about 1 inch apart so that its serosal surface was in contact with the peritoneum and its mucosal surface was exposed to the abdominal cavity. The section on each side of the main blood supply was sutured to the peritoneum but not closely enough to interfere with circulation. One edge of the intestinal sheet was sutured to the peritoneum next to the abdominal midline. Suturing this section to the peritoneum was difficult but probably would have been easier if the original abdominal incision had been larger and if an assistant had been available. The omentum was not amputated although it was in the original experimental work. The abdominal incision was closed in routine manner and a plastic spray bandage was applied. Oral antibiotics were given for 4 days, and a liquid diet was offered to the patient. After the third day, the dog was given semisolid foods. Solid foods were accepted by the dog after one

Dr. Deutsch is a practitioner in New Hyde Park, Long Island, N.Y.

*Diamox, Lederle Laboratories, Pearl River, N.Y.

[1]Neumann, Charles G., Braunwald, Nina S., and Hinton, J. William: The Absorption of Ascitic Fluid by a Pedicled Flap of Intestinal Mucosa Exposed Within the Peritoneal Cavity. Plastic and Reconstructive Surg., 17, (March, 1956): 189-195.

week. Other than one day of vomiting, recovery was uncomplicated. Abdominal tenderness was present for a few days postoperatively.

The operation was considered successful since ascitic fluid did not accumulate in sufficient quantities to require paracentesis. No further medication was required, and the owner was extremely pleased with the results.

# Tularemia in Wyoming Sheep

J. F. RYFF, D.V.M.
H. A. MICHAEL, D.V.M.
E. S. NORTON, D.V.M.

ON SEVERAL OCCASIONS, tularemia has occurred in sheep; in, Idaho, Montana, and Alberta, the disease is transmitted by the tick, *Dermacentor andersoni*.[2-4] In May, 1960, tularemia was diagnosed for the first time in Wyoming sheep near Lander.

Of 2,100 ewes and lambs, approximately one third were stiff or lame and losing weight. Within 4 or 5 days, 5 ewes and 9 lambs had died. Usually, affected sheep were lame in the front legs and lay down much of the time. They held their heads high when walking and were emaciated to varying degrees. On closer examination, sheep were found to be heavily infested with ticks, especially under the forelimbs where the ticks appeared as large plaques. Pulse and respiration were accelerated, and in most lambs there was evidence of anemia. Body temperatures ranged from 104 to 108 F.

Two weeks previous to the onset of disease, the sheep had appeared normal. Three days afterward, they were driven to the range, where signs of illness first appeared 10 days later. This range, made up largely of sagebrush, was exceptionally dry. Herders in the area had observed that the tick population was far greater than usual.

A blood sample from 1 sheep with a body temperature of 107 F. was positive at 1:80 on the agglutination test for tularemia. A sample from another with a body temperature of 106 F. was positive to 1:320.* After 5 female and 3 male *D. andersoni* from an infected sheep were ground, a suspension of them was injected into a guinea pig. The guinea pig died 6 days later. At necropsy, the spleen was enlarged and studded with small foci; a few such foci were present in the liver which appeared to be enlarged. The spleen and liver were cultured on cystine heart agar with added blood, and small colonies developed. These colonies were found to stain faintly. Gram negative cocci and were identified as *Posteurella tularensis* on the basis of their morphologic and biochemical characteristics.[1]

No attempt was made to reduce the tick infestation. When the tick population decreased, losses ceased in the sheep. Reasonably prompt recovery from lameness and other signs of the disease followed. A total of 23 deaths in sheep were ascribed to tularemia.

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Dr. Ryff is director, Wyoming State Veterinary Laboratory, Laramie; Drs. Michael and Norton are practitioners at the Lander Veterinary Hospital, Lander, Wyo.

*Plate agglutination test utilizing Pasteurella tularensis antigen by Division of Laboratories, Wyoming Department of Public Health.

and Nathan R. Smith (ed.). Williams and Wilkins Co., Baltimore, Md., 1957.

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[3]Marsh, Hadleigh: Newsom's Sheep Diseases. Williams & Wilkins, Baltimore, Md. (1958): 36-38.

[4]McArthur, F. X., and Brown, S. B.: Tularemia in Sheep. J.A.V.M.A., 116, (March, 1950): 204-205.

## Canine Tularemia Resembles Distemper

In 2 cases of naturally occurring canine tularemia in Austria, the clinical signs resembled those of distemper. In 1, the clinical signs were similar to the signs of pulmonary tularemia in man. Distemper and tularemia can be differentiated by serologic examination.—*Wien tierärztl. Monatschr. (Aug., 1960): 499.*

## Sheep Die from Copper Sulfate

Six of 95 ewes died from chronic copper poisoning after grazing pasture that had previously been sprayed with a 1.0 per cent copper sulfate solution as a molluscicide in liver fluke control.

Copper contents of herbage up to 200 p.p.m. in the dry matter were recorded and these high levels persisted throughout the dormant winter period (up to 5 months after spraying) in spite of heavy rain and, in some cases, flooding.—*Brit. Vet. J., 116, (Nov., 1960: 408.*

## Sheep Calculi Formation Studied

Observations suggest that the mucoid material which forms the matrices of calculous material in the urinary tracts of sheep may originate at higher levels in the urinary system than the region of transitional epithelial cells.

Evidence is based on the simultaneous appearance of urolithiasis and an abnormal increase of periodic acid-Schiff (PAS)-positive material within the cells of the proximal and distal convoluted tubules and collecting tubules, on the brush borders of the proximal convoluted tubules, as cast material within the lumens of the collecting tubules, and on the surface of the transitional epithelial cells of the renal pelvis and urinary bladder.—*J. Urol., 85, (Aug., 1960): 226.*

*The Pattern and Causes of*

# "Breaks" Following Vaccination with Attenuated Hog Cholera Vaccines

H. W. DUNNE, D.V.M., PH.D.

THE INCREASED use of attenuated virus (lapine and porcine origin) in the vaccination against hog cholera has caused an increased interest in the causes of vaccination failures following the use of these vaccines. In this report, an attempt has been made to incorporate both old and new factors into a logical classification of "breaks"* (vaccination failures). Such an attempt at an epizootiologic regimentation will undoubtedly be altered to some degree by future investigations but provides a comprehensive classification based on present knowledge.

The first step in a logical classification of hog cholera breaks is to distinguish between those animals in which there was a failure to develop an active immunity and those in which the passively acquired antibodies failed to neutralize virus at the time of vaccination. The first was formerly called a "virus break" because the virus failed to stimulate antibody production. The second was called a "serum break" because the serum was not able to neutralize the virus which was used in the vaccination procedure. In recent years, many new factors have been introduced which make the classifications "virus break" and "serum break" impractical. We will refer instead to "long-term breaks" and "short-term breaks."

### Long-Term Break

The long-term break is one which occurs when the passive immunity conferred by the serum administered at vaccination is depleted and when active antibody production has not been stimulated. Exposure of swine to hog cholera virus after antibody depletion has taken place almost always results in infection and death. Illness is usually observed several weeks after vaccination but may occur within 4 weeks following injection of the vaccine and serum. Generally 1 pig is ill for a few days prior to any extensive illness in the herd. The explanation for this is, of course, that 1 pig is infected originally and he, in turn, exposes all others in the herd to the virus. All swine in the herd which are susceptible subsequently become ill and usually die.

*1) Antibody block.*—Any means by which antibodies, specific for hog cholera, gain entrance to the pig's body prior to vaccination may provide an antibody block. Antibody block is most commonly caused by the practice of giving anti-hog cholera serum alone prior to vaccination with vaccine and serum. It is also caused by presence of prevaccination antibodies due to absorption of maternal antibodies from the hog cholera-immune sow. It has been shown that excessive serum given with virulent virus may interfere with the development of active immunity, resulting in antibody block.

*a)* Previous Anti-Hog Cholera Serum Alone.—Most of the field cases in a recent study of hog cholera breaks in the Midwest involved pigs which had passed through one or more community sales in interstate movement. The practice of many communities, particularly in fringe swine-producing areas, is to administer serum alone to all pigs handled. This procedure provides adequate protection for a period of approximately 3 weeks but prevents reliable active

From the Department of Veterinary Science and the Pennsylvania Agricultural Experiment Station, Pennsylvania State University, University Park.

*The appearance of hog cholera in a herd following vaccination.

immunization with attenuated virus and serum during this time and even afterward. Even if vaccinated with attenuated vaccine and serum during this time, pigs become susceptible as soon as the passively acquired antibodies are lost. Illness from hog cholera infection in these pigs manifests itself slowly, usually in 1 pig, not sooner than 3 weeks but possibly as long as 3 months after vaccination. Losses are usually heavy and may involve an entire herd. The disease in individual pigs usually follows the typical course for hog cholera but there may be an extended incubation period.

It appears as though the residual, passively acquired antibodies may delay clinical evidence of infection in some swine from 2 to 5 days, or even longer, thereby giving the disease an appearance of being a chronic infection. Treatment of the infected herd with virus and serum will save practically none of the pigs which have been infected for more than 4 days. It will result in active immunization of almost all those infected for 4 days or less, but will probably not confer an immunity on any swine which still retain a protective passive immunity. This latter situation is most evident if the infection takes place between 3 and 5 weeks after vaccination.[6,13]

*b)* Maternal Antibodies.—It has been well established in recent years that maternal antibodies in the pig, derived from colostrum, are almost completely absorbed in the first 24 hours of life. Some investigators, however, have demonstrated resistance to hog cholera in pigs suckling a sow but not in those of the same age which also had been suckling but which were weaned 72 hours before exposure to the virus. Apparently, maternal antibodies interfere in the development of active immunity in pigs vaccinated against hog cholera if younger than 6 weeks old. Such antibodies are more prevalent in pigs from sows previously vaccinated with virulent virus and serum than in those from sows vaccinated with attenuated vaccines and serum. However, maternal antibodies from sows vaccinated by both methods appear to interfere to some extent with the development of active immunity.

The duration of passive immunity acquired from the serum given at the time of vaccination of these young pigs again determines the additional period of protection against hog cholera. Four weeks or longer after vaccination, pigs may sicken from subsequent exposure. If temperatures are taken for 10 days to 3 weeks after exposure, some pigs which had a reaction to the exposure will have recovered. Diagnostic characteristics of such breaks include a history of vaccination at a very young age, frequently a history of vaccination of dams with virulent virus and serum, a low percentage of losses in the pigs, and the recovery of some pigs without treatment.[2,3,6,16,19,20]

*c)* Excessive Serum at Vaccination.—What constitutes an excessive amount of serum for vaccination is debatable. Using virulent virus in simultaneous vaccination, one investigator[23] showed that 1.72 cc. of anti-hog cholera serum per pound of body weight neutralized 2 cc. of commercial virus so completely that an adequate active immunity was not established.

On the other hand, 1 cc. of serum per pound of body weight did not interfere with the development of an adequate active immunity in pigs vaccinated with an attenuated vaccine.[14] Perhaps additional information on this point will be forthcoming. However, there appears to be little real need to exceed 1 cc. of anti-hog cholera serum per pound of body weight under most circumstances.

*2) Nonspecific Resistance.*—From 1 to 3% of all pigs completely resist hog cholera infection. There is little doubt that any particular drove may have a resistance which is not adequate to resist virulent virus but may interfere with vaccination with attenuated vaccines. Many factors probably influence this natural resistance but one suspected and partially proved factor is the protein level in the ration. There is evidence to suggest that diets low in protein increase the resistance of animals to infection with viruses. It further appears that the rate and level at which the deficiency is established may be important. If, however, protein deficiency can increase resistance, it also could interfere with the development of active immunity.[21]

*3) Loss of Immunizing Titer of the Vaccine.*—Any factor which could decrease the number of viable virus particles in the vaccine would adversely affect the development of active immunity. The exposure of the virus to high temperatures such as occur in the back of a car in summertime, or the loss of vacuum in the dried product permit-

ting it to oxidize, or the use of vaccines reconstituted and stored for long periods, or excessive dilution of the vaccine all could result in a sufficient decrease in viable virus particles to cause vaccination failure. The degree of failure would be proportional to the loss of viable virus particles.

*4) Expected Limit of Efficiency of Vaccine.*— This category probably encompasses many of the preceding categories. Recent work in the hog cholera test area in Florida showed that, in general, attenuated hog cholera vaccines had an 85 to 95% efficiency.[24] Therefore, in each herd one could expect to find from 5 to 15% of the vaccinated swine susceptible after the passive immunity conferred by the serum at vaccination had been lost. It must also be remembered that the same factors cited in the previous paragraphs can be responsible for loss of efficiency in vaccines.

#### Short-Term Break

When pigs become ill within 10 days after vaccination, the term "short-term break" is used. It is difficult for the practitioner to explain this to the owner because there is an immediate inferred responsibility placed upon the veterinarian for introducing infection into the herd by means of the vaccine.

*1) Previous Infection with Hog Cholera Virus.*— Without doubt, the most common cause of the short-term break is the existence of infection within the herd at least 4, and usually more, days prior to vaccination. Infections of this nature are usually observed in pigs raised on the premises by the owner, who has seen 1 pig sicken and perhaps die and who logically becomes concerned about the possibilities of hog cholera. The veterinarian is usually called and may be informed of the situation. Too often, however, no mention is made of the sick or dead animal and early vaccination is urged by the owner, or the owner may remove the sick or infected pig and send the balance to a community sale. If the first infected pig had been clinically ill for less than 4 days, it is possible that none of the rest of the pigs would become ill after vaccination. If, however, virus has been shed by the sick pig for longer than 4 days, some if not all of the exposed pigs would become ill and die after vaccination. Pigs would appear "off" within 5 days after the sale unless the buyer was not sufficiently observant or otherwise was unable to notice illness at this time. Losses would be heavy. The first pigs probably would die within 8 days following vaccination. Losses usually would include more than 1 pig within this period. If a large drove, several pigs could die quickly, and large numbers would become ill within the 8-day period.

Peracute deaths are not associated with reversion to pathogenicity of vaccine, nor do they occur in large numbers in typical hog cholera. Even in cases of hypersensitivity, which will be discussed later, death seldom occurs less than 9 to 12 days following exposure under experimental conditions. This, then, strongly suggests that when deaths occur on or before 8 days after vaccination, infection with common field virus must have taken place at least 12 to 14 days earlier, which would place initial exposure at 4 to 6 days or more prior to vaccination. The serum at the time of vaccination would not be effective against an infection established 6 days prior to its administration.[7,8,13]

*2) Decreased Resistance to Vaccine Virus.*—Much speculation has developed over the reversion of attenuated vaccines to a more pathogenic state. There is ample evidence to indicate that such a reversion is possible and this phase will be discussed under "vaccine reversion." However, in many instances the suspected reversion in the field cannot be demonstrated in the laboratory. The field pigs may have had the clinical signs of hog cholera, including a low leukocyte count. Injection of infective material from these pigs into hog cholera-susceptible pigs, however, elicits only a mild leukopenia, a mild 1- or 2-day temperature rise, and then a return to normal. What then are the factors which produce these unorthodox reactions?

*a) Ascarid Infections.*—Considerable evidence has been compiled to strengthen the view of practitioners who warned their clients about the dangers involved in vaccination of ascarid-infected pigs. Extracts made from adult ascarids have been shown to decrease the resistance of pigs to hog cholera. Decreased resistance was manifested by more severe lesions, a shorter incubation period, and a more acute course of disease. If ascarid-infected pigs were vaccinated with an attenuated virus, a more

severe reaction to the virus would probably result and might be severe enough to cause death.[11]

*b)* Simultaneous or Prior Infection with Bacteria or Protozoa.—*Salmonella choleraesuis* infection prior to exposure to hog cholera increases the susceptibility of pigs to this virus disease. If Salmonella infection existed prior to vaccination with an attenuated vaccine, pathogenicity of the vaccine virus would appear to be enhanced; whereas, actually the susceptibility only of the pig was increased. Other bacterial infections and possibly other viral infections are capable of increasing susceptibility of swine to hog cholera. Protozoan infections also may lower an animal's resistance. Eperythrozoonosis is known to create a hypoglobulinemia in cattle. Field experiences with hog cholera suggest that hog cholera in a herd infected with this protozoan is characterized by marked severity of lesions.[5,10]

*c)* Hypersensitivity.—In several instances evidence of reactions to nonpathogenic, nonimmunogenic virus suggests that it is possible to increase an animal's sensitivity to infection by exposing it to the partially destroyed causative agent. While proof of this reaction is still being accumulated, it is already suggestive that pigs injected with hog cholera virus which has been made nonpathogenic and also nonantigenic, as far as immunity is concerned, may react much more vigorously to challenge with virulent virus than pigs not previously exposed. In these cases, as in the above cases of increased susceptibility, the losses would be relatively small in numbers, possibly 15%. Attempts to transmit clinical disease to hog cholera-susceptible pigs would probably be unsuccessful.[1,7,8]

d) Isoantibodies.—Recent research has shown that isoantibodies contained in serum injected simultaneously with the vaccine can cause a marked temperature rise in the vaccinated pig. It seems plausible that such a reaction could play an important role in increasing the susceptibility of a pig to the injected vaccine.[12]

*3) Vaccine Reversion.*—True reversion to pathogenicity of a vaccine virus as observed in the field is characterized by several peculiarities. First of all, some of the pigs which become ill recover. Administration of anti-hog cholera serum increases recoveries. The disease in a number of pigs may run a chronic course. Finally, attempts to reproduce the disease in hog cholera-susceptible pigs usually are successful, but the disease may be chronic or the pig may develop a severe acute disease and recover. In these respects, vaccine reversion differs from practically all other types of short-term breaks.[22]

*4) Variant Virus.*—The term "variant hog cholera virus" refers to any strain which is in some way noticeably different, either pathogenically or antigenically, from that commonly observed in the field. It may be a pathogenic variant such as is employed in attenuated vaccines, or it may be an antigenic variant such as occurred in the nationwide 1949 to 1950 breaks. Even the type mentioned in the preceding paraphs as a vaccine reversion virus can be considered a variant.

The most important variant, however, probably was the antigenic type of 1949 to 1950 which was associated with vaccination using the fully virulent virus and serum. The major characteristic of this virus was its resistance to neutralization by standard anti-hog cholera serum. At least 3 times the government standard test dose of anti-hog cholera serum was required to neutralize this virus in the vaccination procedure. However, the variant was not known to cause hog cholera in pigs after active immunity had been established. All cases of vaccination failure occurred shortly after vaccination and losses were usually heavy. The incubation period and the course of the disease were short. Encephalitic signs sometimes were seen. With the changes in virus production and the decline of use of fully virulent virus in the vaccination process, little evidence of this type of variant has been seen in recent years. However, it undoubtedly still exists as a field virus, in which case the requirement for greater quantities of serum for neutralization is not so easily recognized.[4,9]

*5) Latent Viruses.*—The most recent advance in hog cholera research has been the recognition that hog cholera virus may lie in a dormant state within a pig's body until the pig is excited by stress, at which time the virus becomes active. Certain prerequisites are necessary for this to happen. First, a previous infection with hog cholera should have taken place on the premises where the latent virus was acquired. Second, the virus must have been in the latent

state when it entered the body of susceptible pigs such as in the egg of the lungworm which in turn has as its intermediate host the earthworm. Stress could be supplied in the nature of the vaccination itself. If such a virus were activated, the course of disease should be of the nature of a typical hog cholera infection. The number of pigs involved, however, would probably be limited for it has been difficult to cause hog cholera by this method in the laboratory. Probably losses resulting from this type of a break would be limited to 2 to 5% of the swine vaccinated.[16–18]

#### Comments and Conclusion

Future research will undoubtedly offer further explanations for vaccination failures. Some apparently obvious factors have not been mentioned. A good example would be failure to vaccinate all swine in a herd, leaving some susceptible to hog cholera.

It is often difficult to obtain accurate histories. Many times the owner does not know the factors involved in the case. Sometimes the owner thinks he knows the answer and gives biased information, justifying his conclusions. In other instances, he is afraid that he will "lose face" if he tells the truth. In a few cases, the owner may wish to make someone else responsible so as to regain some monetary loss that has been suffered. Then there is a limited number of those rare characters who are just downright uncooperative and disagreeable. In the field experiences cited, the most difficult problem encountered was that of obtaining accurate, complete, unbiased histories.

Also, it is possible for uncomplicated diseases from causes other than hog cholera to be confused with vaccination breaks. Included among these are edema disease, septicemic salmonellosis, pasteurellosis, streptococcicosis, and acute swine erysipelas. None of these, however, produce the leukopenia and brain lesions observed in hog cholera and usually occur as a primary disease more than 2 weeks after vaccination. Disease earlier than this would indicate a mixed virus and bacterial infection, since the virus used in vaccination would probably still be present in the animal's system. The course of disease in the primary bacterial infections is markedly altered by specific antibiotics or chemotherapy.

In conclusion, it should be possible through careful analysis to determine with a reasonable degree of accuracy the factors influencing a vaccination break if accurate information on history, clinical observations, and laboratory data are available.

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## Activity of Hog Cholera Virus Following C-V Vaccination

In a German study, it was found that swine exposed to hog cholera virus eliminated the virus in 2 to 5 days, provided they had previously been vaccinated with crystal violet vaccine by 2 injections 2 weeks apart.

Upon a second exposure to hog cholera, the virus was no longer eliminated. Passage of hog cholera virus through swine protected by crystal violet vaccine reduced the virulence of the eliminated virus.—*Arch. Exptl. Vet. Med., 14, (1960): 996.*

## Foot-and-Mouth Disease in Sweden

Foot-and-mouth disease (FMD) has occurred in Sweden recently. To prevent introduction of FMD into the United States, action has been taken to prohibit imports from Sweden of sheep, cattle, other domestic ruminants, or swine. Importation of certain animal by-products, hay, and straw will be permitted under stringent restrictions.

Action has also been taken to stop imports from Sweden of fresh, chilled, or frozen meat derived from any ruminants or swine. Meat imports from Sweden during the past year amounted to about a half-million pounds of fresh beef and veal.

Announcement of discovery of the disease in Sweden was made in accordance with Section 306 of the Act of June 17, 1930. This Act requires that the Secretary of Agriculture notify the public and impose protective measures whenever it has been determined that FMD or rinderpest exists in any country.—*USDA, Washington, D.C., Dec. 9, 1960.*

*Experimental Evaluation of Culture and Serum Vaccination for the*

# Control of Swine Erysipelas

## *IX. Limits of Safety of Anti-Swine Erysipelas Serum Lot G*

RICHARD D. SHUMAN, B. SC., D.V.M.

BASED ON experimental results in pigs, the potency of anti-swine erysipelas serum lot G, in conjunction with live virulent culture of *Erysipelothrix rhusiopathiae*, was believed to be within the best range of potential safety and efficacy.[1,2] Since the dosage of serum and culture had been kept constant in these experiments (10.0 ml. of serum and 0.5 ml. of culture), the limits of safety for each individual serum lot (A through K) were not shown.

The objective of this experiment was to determine the limits of safety of serum lot G in the simultaneous vaccination of weanling pigs farrowed by dams susceptible to swine erysipelas.

### Materials and Methods

Sixty weanling pigs from 10 dams were used; pigs were allotted equally according to litter, weight, and sex into 5 groups of 10 pigs each; the remaining pigs were used as pen contact controls. After weaning the pigs, 9 of the 10 dams were shown to be susceptible to erysipelas infection by the percutaneous or skin scarification method of exposure.[3] The tenth dam was found to be immune; therefore, her litter of 8 pigs was removed from the experiment. This resulted in an imbalance of sex distribution and the loss of 3 pen contact controls.

The pigs were vaccinated when 55 to 58 days of age, a mean of 57.0 days. The individual pig weight varied from a mean of 27.1 lb. in groups 3 and 4, to 27.8 lb. for pigs in group 2. Groups 1, 2, and 5 contained 6 uncastrated males and 3 females, and groups 3 and 4 contained 5 uncastrated males and 4 females.

A maximum of 6 pigs, which included a contact control, were placed in a single pen. Each pen of pigs was separated from another by an empty pen. The pigs were kept on a concrete floor from birth to completion of the experiment. They were fed a balanced ration containing an antibiotic* at the rate of 6 lb. to a ton of feed. Iron-dextran,** 2 ml. intramuscularly, was administered to each pig at 3 to 5 days of age.

Weanling pigs in the 5 experimental groups were vaccinated with 0.5 ml. of commercial desiccated virulent culture, reconstituted as directed by the producer. In addition, each pig of groups 1 through 4 was given serum lot G as follows: group 1, 20.0 ml.; group 2, 10.0 ml.; group 3, 5.0 ml.; and group 4, 2.5 ml. Pigs of group 5 were not given serum and served as culture controls. Inoculations of serum and culture were given subcutaneously in the right and left axillary space. After vaccination, the rectal temperatures were recorded daily for 8 days for each of the pigs in groups 1 through 4, and for 10 to 18 days for each of the pigs in group 5. Daily observations of the sites of culture inoculations were made from days 2 to 7. Hemocultures were made on postvaccination days 3, 4, and 5 by withdrawing approximately 20 ml. of blood aseptically from the anterior vena cava and inoculating the entire amount in flasks containing 150 ml. of beef infusion broth. Subcultures of the broth were made after 48 hours' incubation at 37 C. and examined for the presence of *Ery. rhusiopathiae*.

### Results

A summary of the response of weanling pigs to vaccination is presented (Table 1).

*Cutaneous Response*—A cutaneous lesion appeared at the site of culture vaccination of 8 of 9 pigs in group 1. All 9 pigs in each of groups 2, 3, and 4 developed a cutaneous lesion, and 5 of 9 pigs in group 5 developed a lesion at the site of vaccination. In addition, in 7 of 9 pigs of group 4 and in all 9 pigs of group 5, there was evidence of generalized infection in the form of 1 or more

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The author thanks Dr. T. G. White of this division for his help in the conduct of this experiment.

*Aurofac, American Cyanamid Co., Pearl River, N.Y.

**Armidexan, Armour Veterinary Laboratories, Kankakee, Ill.

**TABLE 1—Response of Weanling Pigs Following Vaccination**

| Group No. | No. pigs in group | Dosage (ml.) Culture | Dosage (ml.) Serum | Cutaneous response: Vaccination site | Cutaneous response: Generalized | Positive hemoculture* at postvaccination day—: 3 | 4 | 5 | Temperature response (F.) at or above—: 102 | 103 | 104 | 105 | 106 | 107 | 108 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Number of pigs | | | | | | | | | | | |
| 1 | 9 | 0.5 | 20.0 | 8 | 0 | 0 | 0 | 0 | 9 | 5 | 0 | 0 | 0 | 0 | 0 |
| 2 | 9 | 0.5 | 10.0 | 9 | 0 | 0 | 3 | 1 | 9 | 9 | 3 | 0 | 0 | 0 | 0 |
| 3 | 9 | 0.5 | 5.0 | 9 | 0 | 2 | 2 | 1 | 9 | 8 | 0 | 0 | 0 | 0 | 0 |
| 4 | 9 | 0.5 | 2.5 | 9 | 7 | 3 | 5 | 1 | 9 | 9 | 4 | 1 | 0 | 0 | 0 |
| 5 Culture controls | 9 | 0.5 | .... | 5 | 9 | 9 | 8 | 9 | 9 | 9 | 9 | 9 | 9 | 4 | 2 |
| Contact controls | 7 | .... | .... | .... | .. | .. | .. | .. | 7 | 5 | 1 | 1 | 1 | 1 | 0 |

*Highest number is also total number of pigs from which Erysipelothrix rhusiopathiae was recovered.

urticarious lesions not directly associated with the vaccination site.

*Hemoculture.—Erysipelothrix rhusiopathiae* was not recovered from the pigs of group 1; it was recovered from 3 pigs of group 2, from 2 pigs of group 3, from 5 pigs of group 4, and from all 9 pigs of group 5.

*Temperature Response.*—None of the pigs of groups 1 and 3 had temperatures of 104 F. or above. In groups 2 and 4, there were 3 and 4 pigs, respectively, that had temperatures of 104 F. or above, and 1 pig in group 4 that had a temperature of 105 F. or above. All 9 pigs of group 5 had temperatures of 106 F. or above, and 2 had temperatures of 108 F. or above. Of the 7 pen contacts, with the exception of 1 pig in group 5 that became infected with swine erysipelas, no temperatures were recorded at 104 F. or above.

## Discussion

On the basis of temperature and cutaneous response, and the results of hemoculture, there was collectively a marked difference between those pigs that were given serum and those that were not. Further, the absence of visibly sick pigs in the groups given serum and those that were not. Further, the absence of visibly sick pigs in the groups given serum, and the presence of recognizably sick pigs in the group not given serum, demonstrated the protective quality of the serum at the time of vaccination.

With regard to the dosage of serum, 20.0 ml. suppressed the measurable signs of infection with the exception of the cutaneous lesion at the site of culture vaccination. With 2.5 ml. of serum, although the pigs were not recognizably sick, several had an upward temperature response, positive hemoculture, and 1 or more urticarious lesions not associated with the vaccination site. This indicated that 2.5 ml. of serum was the approximate minimal dosage. No significant difference could be detected between the 2 groups of pigs that were given 10.0 ml. and 5.0 ml. of serum. Their response to vaccination, however, fell between that of the pigs of groups 1 and 4 that were given 20.0 ml. and 2.5 ml., respectively. Since a safe and practical immunogenic response could be expected when there is a balance between suppression of infection and overt disease, the lesser dosage of 5.0 ml. for about 30 lb. of body weight would seem the most promising.

Estimating the degree or severity of swine erysipelas infection, other than on a live or dead basis, is not always a simple matter. In the pigs of group 5 that were given virulent culture and no serum, there was a correlation between the temperature response, recovery of the organism from the blood, presence of many urticarious lesions, and physical attitude. By comparison, in the pigs of groups 2, 3, and 4 that were given culture and serum, 19 pigs had temperatures of 103 F. or over (less than 104 F.). In 7 of these, hemocultures were positive. Of 7 pigs that had temperatures of 104 F. or over (including 1 pig with 105 F.) hemocultures were positive in 3. The presence of 1 or more urticarious lesions seemed more significant because, of the 7 pigs in group 4 that had urticarious lesions, hemocultures were positive in 5. When related to temperature, however, 3 of the 7 pigs had temperatures of only 103 F. or over (less than 104 F.).

Evidence of infection by the isolation of the organism from the blood without the obvious signs of elevated temperature, urticaria, dejection, inappetence, and pain-

ful locomotion illustrated the aspect of subclinical, inapparent, or unobserved natural infection as it probably occurs on the farm.


#### Summary

Weanling pigs, farrowed by dams susceptible to swine erysipelas infection, were vaccinated with commercial virulent desiccated culture of *Erysipelothrix rhusiopathiae* and anti-swine erysipelas serum lot G. The dosage of culture was constant at 0.5 ml., and 4 groups of pigs were given also 20.0, 10.0, 5.0, and 2.5 ml. of serum, respectively. A fifth group was given only the culture. The results indicated that 2.5 ml. of serum was the approximate minimal dose, and that 5.0 ml. provided a sufficient margin of safety.


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### Cost of Disease Prevention in Swine

Costs for medications and vaccinations to prevent disease were estimated by a prominent pork producer in Kentucky at $1.35 per pig. This figure included treatment to prevent scours, iron injections, antibiotics in the feed for control of clinical and subclinical disease, erysipelas and cholera vaccinations, and deworming and disinfectant materials. It did not include costs of disease due to losses or unthriftiness of pigs as a result of disease.—*Nat. Hog Farmer (Dec., 1960): 10.*

### Irradiated Lungworm Larvae Immunize Calves

Calves given 4,000 nonirradiated lungworm larvae developed severe infections. On an average, 906 adult worms per calf were found. Such calves, when given a subsequent challenge dose of similar larvae, proved to be resistant and experienced only mild infections, and on an average, only 11.4 adult worms were found.

Calves given 4,000 larvae previously irradiated (40,000 r) did not develop severe infections. Their average adult worm count was only 2. Obviously, most of the treated larvae were prevented from reaching the lungs. Furthermore, calves previously given the same number of irradiated larvae proved to be resistant when challenged with 4,000 nonirradiated larvae. Only 13.6 adult worms per calf were found. Apparently, the partially inactivated larvae of the immunizing dose retained their ability to stiumulate the development of immunity.—*Agric. News Letter, DuPont, 28, (Fall, 1960): 7.*

*Results of*

# Feeding of Herbicide-Treated Plants

## *to Calves and Sheep*

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THE RESULTS of numerous studies have indicated that applications of the herbicides 2,4-D (propylene glycol butyl ether ester of 2,4-dichlorophenoxyacetic acid) and 2,4,5-T (propylene glycol butyl ether ester of 2-(2,4,5-trichlorophenoxy) propionic acid) to pastures as recommended by the manufacturers do not produce herbicidal poisoning in livestock or poultry.[1,6,8,10] However, there is evidence that these herbicides may significantly affect the nitrate and hydrocyanic acid (HCN) metabolism in certain plants. Varied effects on the percentages of HCN and nitrates in Sudan grass treated with 2,4-D have been observed. Either nitrate or HCN may be increased or decreased at given times for several weeks following spraying.[12] Results have suggested a relationship between nitrate and HCN metabolism because an increase in the percentage of one is accompanied by a decrease in the other.[12] Others have shown that treating the roots of young soybean and wheat plants with 2,4-D resulted in a decreased nitrate content of the plants.[3,9]

There is an authenticated instance in which 335 acres of sugar beets were accidentally sprayed with 2,4-D, resulting in poisoning to livestock due to an increase in the potassium nitrate content of the sprayed beet tops.[11] In experimental trials using weeds commonly known to accumulate nitrates under certain conditions, it has been shown that those sprayed with 2,4-D and related herbicides accumulated significantly more nitrates than did unsprayed weeds.[2]

The HCN content of wild cherry leaves sprayed with 2,4-D and 2,4,5-T has been shown to decrease steadily for 15 days following spraying.[5,7] It was concluded that spraying wild cherry trees with these herbicides did not augment the hazard to cattle because of an increased HCN content. On the other hand, another investigator arrived at a somewhat different conclusion, after studying numerous cases of alleged livestock poisoning following applications of the "hormone type" herbicides to wild cherries.[13] He concluded that sprayed wild cherries frequently become more intoxicating than those not sprayed but suggested that the increase in toxicity may have been due to a more complicated metabolic process than simply an increase in the HCN content of the plants.

The objectives of this study were to determine: (*a*) if the application of 2,4-D (propylene glycol butyl ether ester of 2,4-dichlorophenoxyacetic acid) to Canadian thistle (*Cirsium arvense*) would cause it to become intoxicating to calves and sheep, (*b*) if spraying tall larkspur (*Delphinium barbeyi*) with silvex* (propylene glycol butyl ether ester of 2-(2,4,5-trichlorophenoxy) propionic acid) would alter its toxicity to calves, and (c) if spraying sneezeweed (*Helenium hoopesii*) with 2,4-D and silvex would alter its toxicity to sheep.

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*Kuron (silvex) is produced by the Dow Chemical Co., Midland, Mich.

## Materials and Methods

*a*) Mature Canadian thistle plants (*C. arvense*) in 2 separate fields were sprayed with 2,4-D at a rate of 2 lb. per acre. Plants from the first field were collected 30 days following spraying, dried in a forced-draft, hot-air dryer, ground, and fed to two 4-month-old Holstein-Friesian calves at a rate of 1.0 per cent of body weight for 14 days via rumen fistulas. The third calf was fed nontreated plants at a rate of 1.0 per cent of body weight for 14 days.

Beginning the fifth day following the application of 2,4-D, the Canadian thistle plants in the second field were collected, chopped, and fed daily, in a green state, to 2 ewes in the amounts of 2 and 4 lb., respectively, for 17 consecutive days via rumen fistulas. Two additional ewes were fed 2 and 4 lb., respectively, of nontreated thistle for the same period.

*b*) Tall larkspur plants (*D. barbeyi*) were sprayed, just before the flowering stage, with silvex at a rate of 8 lb. per acre. Plant collections were made immediately after spraying and 1 and 3 weeks later. They were dried in a forced-draft, hot-air dryer, ground, and all 3 collections were mixed together. They were fed to two 5-month-old Holstein-Friesian calves at a rate of 0.17 per cent of body weight for 4 days. A third calf was fed nontreated plants for 4 days at the same rate.

*c*) Sneezeweed plants (*H. hoopesii*), when in the flowering stage, were divided into 2 separate plots. One plot was sprayed with 3 lb. per acre of silvex, and the second plot was sprayed with 4 lb. per acre of 2,4-D. Collections were made immediately after spraying and 1 and 3 weeks later. The plants were dried in a forced-draft, hot-air dryer, ground, and the 3 collections from each plot were mixed together.

Two ewes were fed 2,4-D-treated plants; 2 were fed silvex-treated plants, and 1 was fed nontreated plants. One ewe of each pair was fed at a rate of 1.0 per cent of body weight for 8 days; the second ewe was fed at a rate of 2.0 per cent of body weight for 4 days, after which the rate was decreased to 1.0 per cent for 4 additional days. The ewe on nontreated plants was fed at a rate of 1.5 per cent of body weight for 4 days, after which the rate was decreased to 1.0 per cent for 4 additional days.

*d*) Blood samples for laboratory tests were obtained from the jugular veins of all the animals in the feeding trials at the following times: (1) Canadian thistle—before the first feeding, daily for the first week, and on the last day of the feeding trial; (2) larkspur—before the first feeding and on the last day of the feeding trial; (3) sneezeweed—before the first feeding, the last day of feeding, and 6 and 13 days after the feeding trial had been completed.

The following tests were performed on each sample: (1) The total red blood cell volume was determined by the microcapillary method using centrifuge.* 2) Blood area nitrogen was determined by the method of Hench, *et al.*** (3) Blood glucose was determined by the Folin-Wu method, using commercially prepared reagents.† (This test was performed only in the animals fed larkspur and sneezeweed.) (4) Bromsulfophthalein dye retention was determined using a spectrophotometer.‡ Bromsulfophthalein dye,§ 5 mg./kg. of body weight was injected intravenously into sheep and 3.67 mg./kg. of body weight into calves. Samples of jugular blood were taken from the sheep 5 and 15 minutes after dye injection and from the calves 15 and 30 minutes after injection. (5) Serum glutamic oxalacetic-transaminase (SGO-T) and serum glutamic pyruvic-transaminase (SGP-T) determinations were made, using commercially prepared reagents.|| (6) Total serum protein was determined in the sneezeweed trials only, using the method described by Gornall *et al.*[8] and a Model B Beckman spectrophotometer. (7) Serum protein electrophoresis was performed in the sneezeweed trials only.#

*e*) All animals were given free access to good quality alfalfa hay and were under careful observation for clinical signs throughout the experiment.

## Results

*a*) The 3 calves and 4 sheep fed 2,4-D-treated and nontreated Canadian thistle did not develop clinical intoxication. However, all 4 sheep lost considerable weight.

There were no significant changes in the laboratory tests, with the exception that all the sheep had decreased blood urea nitrogen after having consumed the thistle for several days. The loss of weight and the decreased blood urea nitrogen in the sheep reflect the low nutritional level of Canadian thistle. The calves did not have these effects because of their larger rumen capacity, which enabled them to supplement the thistle with alfalfa hay.

*b*) In the 2 calves fed silvex-treated larkspur plants, and in the 1 calf fed nontreated larkspur plants, there was severe

*Micro-Capillary Centrifuge, Model MG, International Equipment Co., Boston, Mass.

**LaMotte Blood Urea Outfit, LaMotte Chemical Products Co., Towson 4, Baltimore, Md.

†Harleco brand reagents and standards, Hartmen-Leddon Co., Philadelphia, Pa.

‡Beckman Spectrophotometer, Model B; "Clinical Analysis with the Beckman B and DU Spectrophotometers," Beckman Instrument Company, Fullerton, Calif.

§Bromsulfalein dye, Hynson, Wescott, and Dunning, Baltimore, Md.

||Dade Chemical Company handbook, "Serum Transaminase Procedure," Dade Reagents, Inc., Miami, Fla.

#Spinco Model R Paper Electrophoresis System, procedure B, Spinco Division, Beckman Instrument Co., Palo Alto, Calif.

intoxication. However, the laboratory test results revealed no deviation from the normal values. The signs observed in all the animals indicated that there was no altered toxicity in the silvex-treated plants.

All the calves had severe constipation beginning the second day and continuing throughout the feeding trial. On the third day, they had slight incoordination and, on day 4, all were weak and had almost complete skeletal muscle paralysis and incoordination. They were unable to rise and walk; when excited, their condition was more acute, but they maintained a desire to eat when hay was held before them. No convulsions were observed, but 1 calf fed the treated larkspur was found dead on the morning of day 5. The 2 remaining calves made uncomplicated recoveries after the feeding of larkspur had been discontinued.

*c*) In the 5 sheep that were fed sneezeweed, there were marked signs of poisoning. The 2 fed 2.0 per cent and the control fed 1.5 per cent of their body weights had earlier and more pronounced signs than did the 2 fed 1.0 per cent. There was no evidence that the spraying of the plants with 2,4-D and silvex increased or decreased their toxicity to the sheep.

The first clinical signs appeared on day 3, when the sheep stopped eating hay and their rumens became atonic. Subsequently, on days 4 and 5, they became depressed and weak. Other constant signs included bloating, diarrhea, muscular weakness, fast pulse, and a rapid loss of weight. The clinical signs became more pronounced each day until feeding of sneezeweed was discontinued.

The 2 sheep fed the 2.0 per cent level of the treated plants and the control fed nontreated plants were killed for necropsy 2 weeks after the last day of feeding. They were still intoxicated from the sneezeweed. The other 2 sheep (fed 1 per cent from each plot) made a slow and partial recovery, but they had not regained their original stamina and weight after 3 months.

The necropsy findings were essentially the same in the 3 killed animals. On gross examination, the livers were brick-red and congested and had some light-colored areas of apparent degeneration. The kidneys were grossly congested and swollen, and their capsules were easily removed. The hearts of the sheep fed nontreated and silvex-treated plants were thin-walled and flaccid. The heart of the sheep fed 2,4-D-treated plants was grossly normal. Tissues from these organs were sectioned and stained with hematoxylin and eosin. Histologic examinations revealed some active congestion of the liver sinusoids, early degeneration and coagulation necrosis of the cord cells around the central veins, and cytoplasmic vacuolation in some areas. In the kidneys, there was early necrosis of the tubular and glomerular epithelium in the outer region of the cortex. No changes in the heart muscle were observed except that, in a small, localized area of 1 section from the sheep fed 2,4-D-treated sneezeweed, the general architecture was disrupted and the cells involved were more deeply stained with eosin than were the normal cells. The significance of this change, if any, is not known.

Although the laboratory tests of the sheep in the sneezeweed trial yielded variable values, they were within the range that was expected, due to individual animal differences. The results of the tests in all 5 sheep indicated a two- to tenfold increase in retention of dye in the bromsulfophthalein liver function tests. There was a 6- to 14-fold increase in SGO-T activity, with a corresponding elevation in SGP-T activity but of a much smaller magnitude. There was a onefold increase in blood urea nitrogen.There was a decrease in serum albumin, with a corresponding increase in *gamma* globulin. In all other laboratory test results, there were no significant changes.


## Summary

Plots of Canadian thistle (*Cirsium arvense*) were sprayed with 2,4-D (propylene glycol butyl ether ester of 2,4-dichlorophenoxyacetic acid) at a rate of 2 lb. per acre. Tall larkspur (*Delphinium barbeyi*) was sprayed with silvex (propylene glycol butyl ether ester of 2-(2,4,5-trichlorophenoxy) propionic acid) at a rate of 8 lb. per acre, and sneezeweed (*Helenium hoopesii*) was sprayed, in 2 separate plots, with 3 lb. of silvex or 4 lb. of 2,4-D per acre.

Collections were made at various times following the herbicidal applications, dried (except for 1 thistle-feeding trial that utilized the green plant), ground, and fed to 4- and 5-month-old Holstein-Friesian calves and adult sheep via rumen fistulas.

There was no indication that the application of the herbicides altered the plant's toxicity for calves and sheep. Canadian

thistle, ordinarily a nontoxic plant, did not produce toxic effects in calves and sheep, after being sprayed with 2,4-D. Treated and nontreated larkspur and sneezeweed were clinically intoxicating to calves and sheep, respectively, but resulted in no clinical differences between those animals fed treated and nontreated plants.

Laboratory tests performed included total red blood cell volume, blood glucose, bromsulfophthalein dye retention liver function, serum glutamic oxalacetic-transaminase (SGO-T), serum glutamic pyruvic-transaminase (SGP-T), blood urea nitrogen, total serum protein, and paper electrophoresis of the serum. The sheep fed sneezeweed had varied but significant increases in bromsulfophthalein dye retention, SGO-T and SGP-T activities, and blood urea nitrogen; however, they had a decrease in serum albumin, with a corresponding increase in *gamma* globulin. The laboratory test results of the animals fed Canadian thistle and larkspur indicated no deviation from normal values.

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## Cattle with Parakeratosis Recover with Zinc Therapy

Among 1,000 cattle in British Guiana, 6 cases of parakeratosis were reported in 1958 and 20 in 1959.

Parakeratosis was diagnosed in these cases because: (1) the lesions in cattle closely resembled those in rats fed a zinc-deficient diet; (2) these cattle were pastured on grasses containing a low zinc content; (3) zinc absorption from the alimentary tract of cattle is relatively low; and (4) zinc sulfate given orally, 2 Gm. per week, or by injection, 1 Gm. per week, was a rapidly effective treatment.—*Nature (1960): 1061.*

# A Mechanical Aid for Pharyngeal and Laryngeal Examination of Cattle

W. A. AANES, D.V.M., M.S.

DIAGNOSIS of diseases affecting the pharyngeal and laryngeal regions is difficult without direct observation of the tissues involved. In cattle, visual examination of these areas is hindered by the tongue, the base of which normally fills the isthmus faucium. A common method of overcoming this difficulty is by use of a tube-type speculum (Frick). This method is not completely satisfactory because the area observed is limited and movement of the tongue makes it difficult to hold the speculum in one position long enough to procure a proper examination. From efforts to obtain a more satisfactory visual examination, came the development of a metal tongue depressor to be used in conjunction with a modified mouth speculum (Sharp and Smith or McPherson).

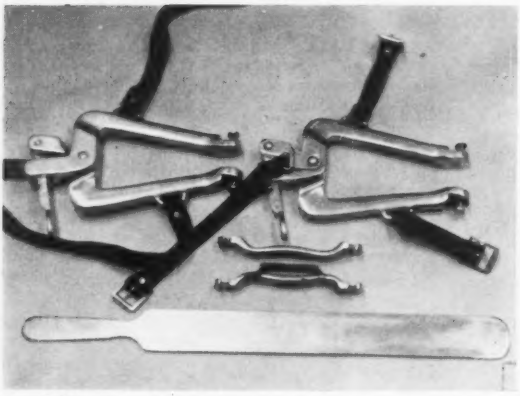
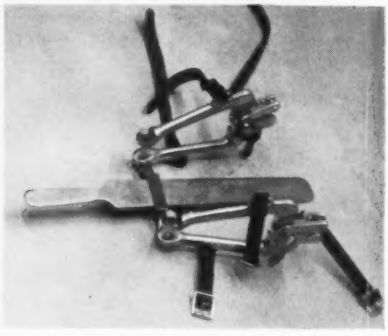


Fig. 1—Tongue depressor and unassembled Sharp and Smith mouth speculum.

Fig. 2—Assembled speculum showing tongue depressor in position.



The tongue depressor consists of a flat piece of steel 56.0 cm. long, 5.0 cm. wide, and 0.5 cm. thick, with one end shaped as a handle. A U-shaped piece of metal 0.3 cm. thick and 1.8 cm. wide serves as a fulcrum for the tongue depressor (Fig. 1 and 2).

From the College of Veterinary Medicine, Colorado State University, Fort Collins.

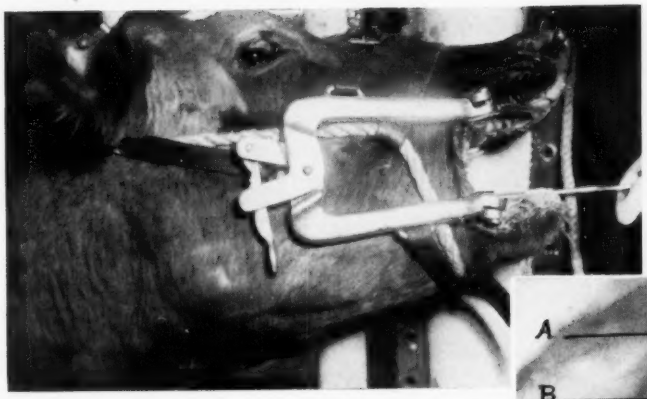


Fig. 3—Speculum and tongue depressor applied to an animal.

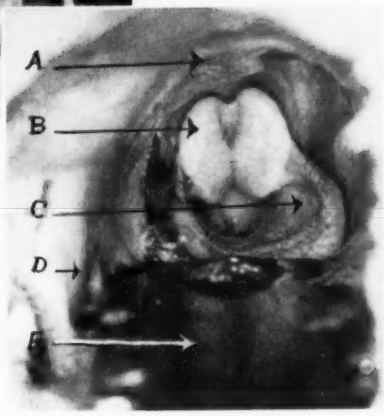



Fig. 4—View of pharynx and larynx obtained using tongue depressor; soft palate (A), arytenoids (B), epiglottis (C), anterior pillar of the pharynx (D), and tongue depressor (E).

After applying the mouth speculum, the depressor is inserted in the slot of the mouth bar and pushed posteriorly over the base of the tongue (Fig. 3). When inserting the tongue depressor, care should be exercised to avoid injury to the base of the tongue at the transverse groove and to the anterior pillars of the pharynx. Upward pressure on the handle of the tongue depressor exposes the pharyngeal and laryngeal region for adequate visual examination (Fig. 4).

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### Treatment of Coccidiosis in Calves

In trials involving a limited number of calves, it was found that partial control of coccidiosis resulted from administration of nitrofurazone in dosages of 15.0 mg./kg. in gelatin capsules or by addition to the milk 12 to 18 days after inoculation of calves with *Eimeria bovis* organisms. Similar results were obtained from sulfamethazine treatment at a dosage of 21.5 mg./kg. 12 and 14 days after inoculation of *E. bovis*.—*Cornell Vet., 50, (Oct., 1960): 351.*

# Tuberculosis in Transported Deer

*— A Case Report*

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J. O. ALBERTS, D.V.M., PH.D.
DANIEL TRAINER, M.S.

THE RECENT shipment into Illinois of deer that were later found to be tuberculous reemphasizes the importance of transported animals as a source of infection for man and for domestic and wild animals. On Oct. 23, 1958, a farmer in the west central region of Illinois received a shipment of 10 white-tailed deer from a licensed deer farm in northern Wisconsin. The 2 largest deer had a respiratory disorder and died suddenly soon after they were received. The local veterinarian reported abnormal fluid in the pleural cavities and sent blood, liver, and lung specimens to the state diagnostic laboratory at the College of Veterinary Medicine of the University of Illinois with a request for diagnosis.

The blood sample was negative to 6 leptospiral serotypes by the agglutination-lysis test and to *Coxiella burnetii* by the capillary agglutination test. On histopathologic examinations of lung tissues of both deer, using Ziehl-Neelsen stain, typical tubercles were visible (fig. 1). Numerous acid-fast bacilli were demonstrated throughout the specimens (fig. 2, 3). Unfortunately, blood samples were discarded before the report of the histopathologic study was completed. Circumstances prevented isolating the organism and attempting to type it.

A report was made to the local veterinarian, and the state and federal veterinary medical regulatory officials were notified.

The 8 remaining deer had been confined by the owner in a half-acre lot near swine and cattle. The owner would not allow the deer to be captured by use of a projectile syringe. It was possible to confine and test only 3. Upon application of the tuberculin test, 1 of the 3 was positive, 1 was negative, and 1 was suspicious. An investigation was conducted to trace the source of the deer and circumstances surrounding their infection.

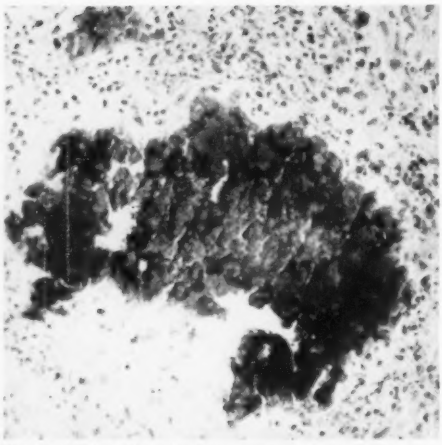

**Fig. 1—This tubercle from a deer lung is an example of the numerous calcified tubercles found in the lungs of both deer. Ziehl-Neelsen stain; x 55.**

The deer had been purchased immediately prior to shipment from a dairy farmer in northern Wisconsin who had been supplying deer for over 30 years. About 60 dairy cattle were kept on the 150-acre farm. The farmer had obtained 8 of the 10 deer from his farm; apparently he had purchased the other 2, which had died with tuberculosis, from a source in Michigan short-

From the Agricultural Experiment Station and the College of Veterinary Medicine, University of Illinois, Urbana, where Dr. Alberts is head, Department of Pathology and Hygiene, Dr. Beamer is professor of Pathology and Hygiene, and Dr. Ferris is associate professor, Pathology and Hygiene. Mr. Trainer is a game biologist in the Wisconsin State Department of Conservation.

Photomicrographs were made by Mrs. Marion Watrach.

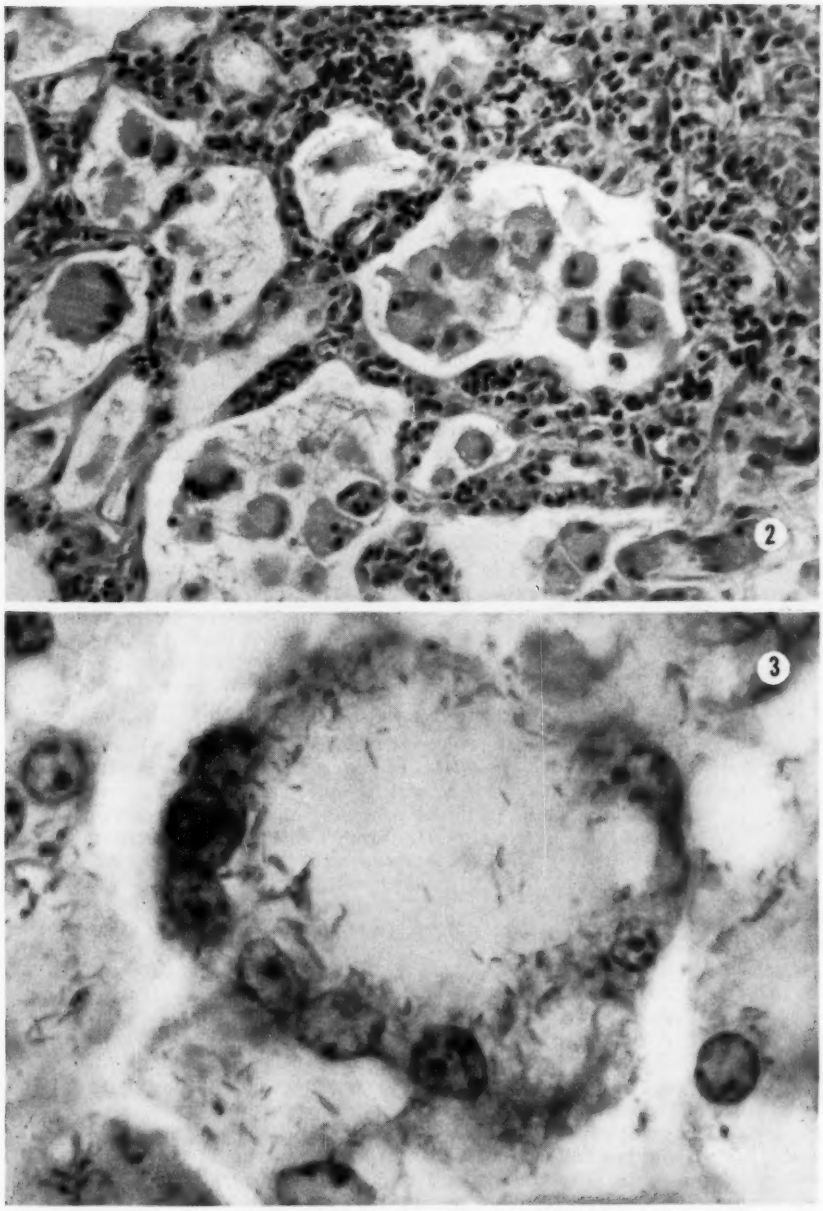


**Fig. 2—Lung tissue from a tuberculous deer has numerous acid-fast organisms. Ziehl-Neelsen stain; x 340.**

**Fig. 3—Acid-fast organisms are visible in a giant cell from lung tissue of a tuberculous deer. Ziehl-Neelsen stain; x 770.**

ly before resale. The conservation officials in Wisconsin were unable to establish the exact source of these 2 deer or other specific information about them. The cattle on the Wisconsin farm were said to be free of tuberculosis.

Deer farms are fairly numerous in the dairying regions of Minnesota, Wisconsin, and Michigan and contact with either cattle or persons with tuberculosis might not be an unusual occurrence. Certainly the matter warrants further study.

As a consequence of finding these tuberculous deer, more than 300 Illinois deer were examined at necropsy during the 1958 and 1959 deer seasons. The necropsy findings in deer of the previous season were also reviewed. Evidence of tuberculosis among these Illinois deer was not found.

These findings indicate that some deer raised in confinement have acquired tuberculosis, and have been or could be the source of infection for man and other mammals. With the enormous increase in the number of deer which has taken place in the past 10 years, this suggests the need for extending regulations now in effect for livestock to deer and other such animals which enter traffic via public or other carriers or which may contact infected human beings and domestic animals.

In this instance, the deer were legally purchased and shipped with the approval of conservation officials. State and federal regulatory officials who are responsible for proper procedures in shipping livestock, although cognizant of these hazards, have not had the authority to deal with this problem. This experience clearly illustrates the need for veterinary medical certification of the health of deer and other wild animals prior to interstate shipment. That the tuberculosis control program should be extended to deer farms is also logical.

## Onchocerciasis of the Withers of Horses

In a study of 1,306 horses and 81 donkeys, 788 horses and all donkeys had macroscopic lesions of onchocerciasis of the withers caused by *Onchocerca reticulata*. In young horses, there was septic swelling with fluctuation in which sequestered soft tissue was palpable without pain. Purulent processes and fistulas occurred rarely. Swellings appeared chiefly from February until August. Serologic tests for *Brucella abortus* were negative.—*Schweiz. Arch. f. Tierheilk., 10. (Oct., 1960): 581.*

## Application of Epinephrine to Anesthetics

The vasoconstrictive property of epinephrine, when added to an anesthetic solution, prevents rapid absorption. It prolongs anesthesia and decreases bleeding. Peak prolongation of anesthesia and probable maximal protection against absorption is achieved with the employment of 1 to 100,000 concentrations of epinephrine or 1.0 mg. per 100 ml. of solution. Almost identical effects can be obtained with 1 to 200,000 or 1 to 300,000 concentrations, or 0.5 and 0.3 mg. of epinephrine per 100 ml. respectively. These quantities should be measured with a calibrated syringe rather than added to the anesthetic solution according to the number of drops, a grossly inaccurate method.

Epinephrine is dangerous to use in patients with myocardial disease or coronary sclerosis.—*New England J. Med., 263, (Nov. 10, 1960): 964.*

*Fiberglass Technique for*

# Preparation of Natural Models

*of the Ruminant Stomach*

R. L. KITCHELL, D.V.M., PH.D.
J. TURNBULL, D.V.M.
R. A. NORDINE, B.S.
S. C. EDGELL

WITH AN ever increasing demand for better utilization of instruction time, more emphasis must be placed on the preparation of effective and permanent teaching aids. Dried and varnished specimens of hollow organs have been used in anatomy laboratories for many years. These specimens often are destroyed by routine use even by the most careful students. The purpose of this article is to describe and illustrate the preparation of sturdy anatomical models of ruminant stomachs using preserved organs reinforced with fiberglass.* A total of 8 such preparations have been made during the past 3 years. All have been in constant use and are in excellent condition.

## Method

The ruminant animal from which the stomach is to be obtained is fed a liquid diet for 24 to 36 hours to facilitate removal of gastric contents. It is also advisable to obtain animals in poor flesh because the fat content of the tissues will be much less. Care should be taken during slaughter to avoid cutting or tearing through the gastric wall. The abomasum is especially thin and tears easily. At least 1-ft. lengths of the esophagus and of the duodenum are left attached to the stomach. Excess fat between the visceral peritoneum and muscular wall and the omentums is removed at this stage.

The stomach specimen is placed on a clean, hard-surfaced floor. The ingesta is removed from the reticulum and the rumen by alternately running lukewarm water into the stomach via the esophagus and flushing the water and ingesta out through the esophagus. A 1½-inch pipe may be inserted into the rumen through the esophagus to keep the cardiac orifice open. A smaller tube may be inserted through the pipe to run water into the stomach. The ingesta will flow out of the rumen and reticulum around the tube. Ingesta from the abomasum and omasum is removed by forcing water in through the duodenum and rolling and kneading these structures while they drain. When the water which has been forced in through the esophagus and which flows out through the duodenum is free from ingesta, the stomach is completely drained of water and inflated with air. At this stage all fat on the stomach wall, around the blood vessels, and in the ruminal grooves is removed.

The stomach is then deflated and fixed by immersion in a 99% solution of isopropyl alcohol. Approximately 2 gallons of alcohol is pumped into the stomach. After a week, the alcohol is drained and replaced by a fresh solution for a total fixation period of 2 weeks. Approximately 10 gallons of isopropyl alcohol is needed for one stomach.

Drying and positioning of the various compartments may be accomplished by suspending the inflated stomach by means of cheesecloth. Several strips of cheesecloth are placed over a table with the ends hanging over the edges. The stomach is then placed on the table and inflated by a constant air flow into the esophagus. The degree of distention can be adjusted by regulating the outflow at the duodenum. The walls should be taut but not overstretched. By tying the cheesecloth to an overhead

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*The authors acknowledge that Dr. Turnbull made the original suggestion as to the proposed process.

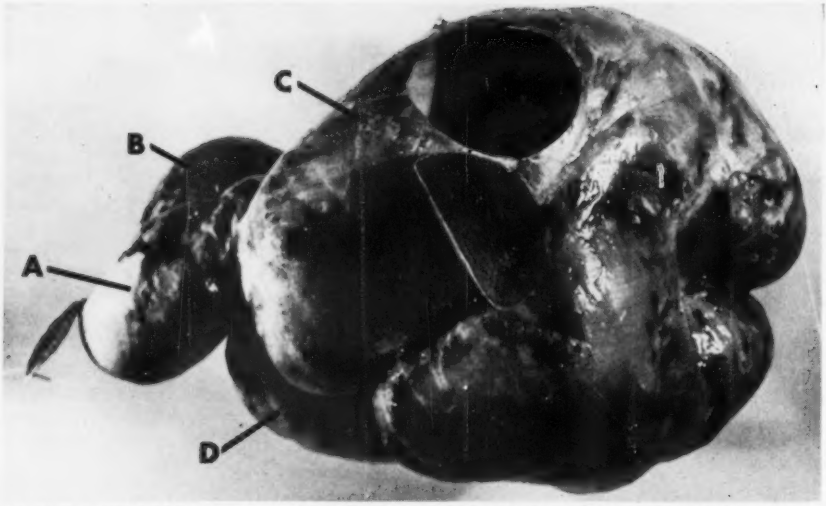



Fig. 1—Left side of fiberglass model of bovine stomach. The model is suspended by a cord. Openings have been made into the dorsal sac of the rumen and into the reticulum. A—reticulum, B—omasum, C—dorsal sac of the rumen, and D—abomasum.

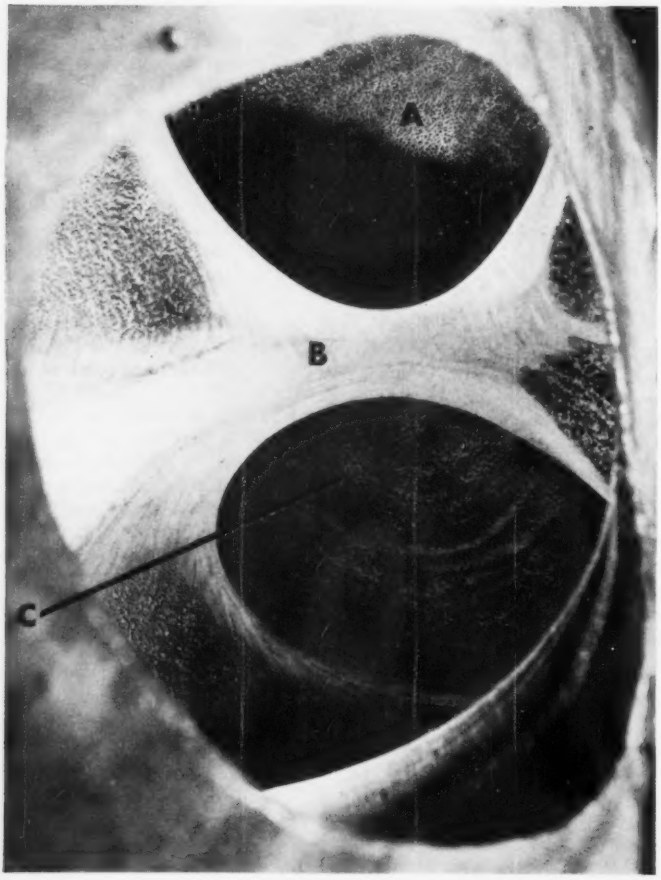



Fig. 2—Interior of the rumen photographed through the opening in its dorsal sac. The camera was directed caudally. A—dorsal caudal blind sac, B—caudal pillar, and C—ventral caudal blind sac. Notice preservation of the topographic relations of the caudal pillar and of the papillae.

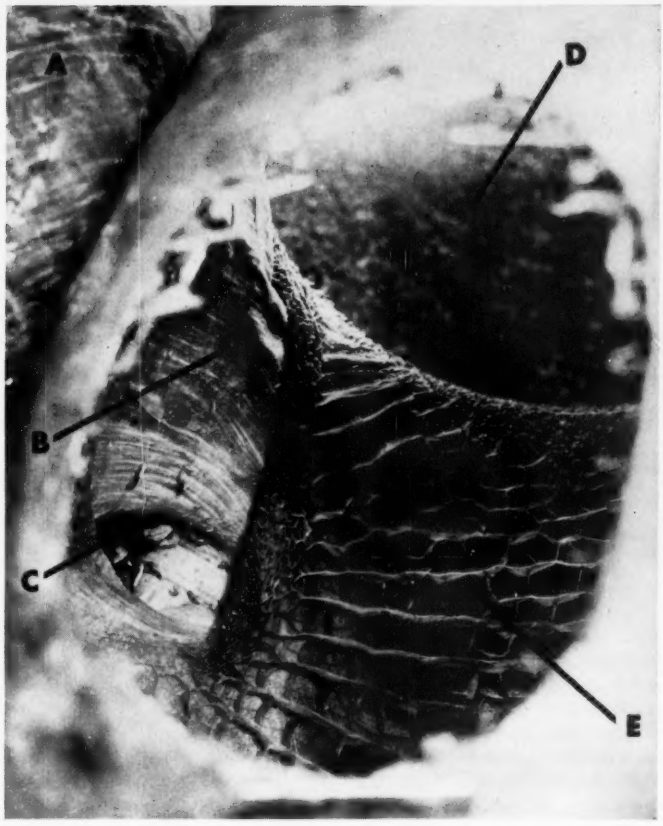



**Fig. 3 — Interior of the reticulum and rumen photographed through the opening in the reticulum. A—omasum, B—floor of the esophageal groove, C—reticulo-omasal orifice, D—mucosal surface of the rumen, and E—mucosal surface of the reticulum. Characteristic morphologic features of the esophageal groove and the lamina of the reticulum are preserved.**

bar, the stomach is suspended by the cheesecloth. The position of the various compartments can be adjusted to natural *in situ* relations. The air flow should be checked frequently during the first few days to insure proper distention and positioning of the compartments. Total drying time is about 3 weeks.

When the stomach is dry, the exterior surface is roughened with a steel brush to insure a better bond between it and the fiberglass. Resin and hardener are mixed in a beaker in half-pint quantities just before use. Pieces of fiberglass mat no larger than 4 by 10 inches are saturated with resin and applied to the external surface of one side of the stomach. A 2-inch paintbrush is used to smooth it on and work out all air bubbles from beneath the mat. Acetone may be used as a solvent in which to clean the paintbrush. The mat is folded into the grooves and between the compartments. One side is allowed to dry before the other side is covered. When the resin is dry, the surface of the stomach is sanded with rough sandpaper. Three to 5 additional coats of resin are then applied. About 2½ gallons of fiberglass resin and 4 yards of 1½-oz., 30-inch-wide fiberglass mat are needed for one model.

Openings are cut into each compartment as desired, using either a vibrating cast cutter or any fine-toothed saw. Each opening should be cut so that there is a 45-degree bevel. Hinges and latches are applied as needed. Additional resin is applied to the cut surfaces of the openings to prevent any accidental separation of the wall of the stomach from the surrounding fiberglass.

The models (Fig. 1-3) indicate how the normal topographic relations can be preserved.

**Summary**

A technique using fiberglass for preparation of natural models of the ruminant stomach is described and illustrated. The models are resistant to damage from insects, water, and rough handling. The normal topographic relations can be preserved for effective classroom demonstrations. The technique is satisfactory for the preparation of natural models of other gastrointestinal organs.

# Relative Value Studies

GEORGE W. COOLEY, M.A.

FEES, of course, are not a new phenomena —but the widespread public interest in and concern about physicians' fees is a product of recent years. There are several reasons for this.

### Increase in Specialization and Growing Complexity of Medical Practice

Not many years ago it was easy for a physician to establish his fees because the key element was the patient's ability to pay and only 2 general groups of physicians predominated—general practitioners and general surgeons. For an office call or a home call, the physician collected a minor fee. Surgery was more complicated, but the number of procedures were relatively few. Charges were based on custom and were handed down from physician to physician. Custom and the patient's pocketbook were the main ingredients, and little or no attention was paid to time involved, education and experience required, cost of overhead, or cost of living.

Today we no longer have just 2 general groups of physicians. Instead we have 32 specialties and many subspecialties. Since 1931, the number of specialists has increased 254% and the number of general practitioners has decreased 25%. With this change have come many new and varied types of treatment and surgical procedures, at least insofar as fee patterns are concerned. For example, an early prepayment plan would contain 200 to 300 procedures, whereas our present Relative Value Study contains over 1,900 procedures. All of this has complicated the physician's problem of setting his fees.

The author is secretary of the A.M.A. Council on Medical Service, Chicago, Ill.

Presented before the Combined Sections on Small Animals, General Practice, and Surgery and Obstetrics, 97th Annual Meeting, American Veterinary Medical Association, Denver, Colo., Aug. 14-18, 1960.

### Widespread Growth and Use of Voluntary Health Insurance

Fifteen or 20 years ago, 90% of the patients paid their physicians directly out of their own resources. Fees were related to ability to pay and varied with the individual as well as the service. The advent of prepayment plans in the late 1930's and early 1940's began to change this slowly.

A basic element of every prepayment plan (and insurance company contract) is a fee schedule or schedule of indemnities. The early plans were designed to assist persons in the low income group and, as such, reflected the physician's custom of reducing fees for this group. Their fee schedules rarely reflected normal charges. Most schedules were kept as low as possible so insurance companies would have a saleable premium. Nobody really expected these plans to mushroom and cover most of the population. However, mushroom they did, especially during World War II, leaving the original purpose far behind. To the dismay of most physicians, this growth was not accompanied by a realistic effort to correlate either fee schedules or benefit allowances with normal or usual fees charged by physicians for the various income groups now included. In fact, even where across-the-board percentage increases were made, an effort was not made to correct inequities between individual procedures. So, instead of helping voluntary health insurance, the problem of setting fees became more complicated.

### Expansion of Health and Welfare Funds and Growth of Closed Panels

During World War II, the entire fee situation was further aggravated by the introduction of so-called "fringe benefits" as a substitute for wage increases. Unions, management, and government became interested third parties, trying to get the best bargains they could. For the most

part, they used voluntary health insurance; so the inequities and problems previously mentioned were merely compounded. With the aid of sales and advertising methods of some prepayment plans and insurance companies, the schedules became confused with physicians' normal fees and many subscribers and policyholders came to believe the protection they were paying for bore a direct relationship to customary doctor's charges. Again the physician was in the middle because this was not true.

Incensed by medical demands for a more equitable relationship between their usual fees and the schedules being used, some unions and consumer groups chose to adopt a mechanism that was old in origin but relatively new in terms of widespread use —the closed panel. Examples are the consumer "co-ops," the Kaiser Plan in California, Health Insurance Plan in New York, and the union health centers. These plans offered a form of competition to the free-choice, fee-for-service system that required serious attention; again, the setting of fees was the center of this attention.

#### Expansion of Government Health Programs

Physicians accepted early government programs as a social responsibility. In general, the result was that reduced fees were accepted from such programs as public assistance, crippled children, armed service dependent program of World War II, and even vocational rehabilitation and workmen's compensation. As these programs grew and new ones, especially Medicare, were added, this attitude of social responsibility changed. With some 38 million persons eligible to receive all or part of their care at government expense, a more realistic attitude has been necessary, particularly in reference to fees and fee schedules.

#### Tremendous Growth in Public Interest in Costs of Care

Evidence of public interest in health is all around us—in magazine and news articles, in union demands, and even in political pronouncements. The public wants good health care and is seeking ways to obtain it. Our big problem has not been with physicians' fee per se, but with the relationship between third party prepayments for different procedures and physicians' usual charges. For example, people don't understand why their coverage pays over 100% of the cost of one procedure and only 10 to 15% of the cost of another. This absence of uniformity of percentage of physicians' charges covered by the ever-increasing number of third party plans clinched the need for some new mechanism or tool whereby charges can be applied more equitably and in a manner that the public can understand.

These then are the reasons for physicians' interest in relative value studies.

#### Relative Values

*What Are Relative Values?*—Relative values are numerical designations which express the relationship of the value of one professional service to another. They are referred to as "unit values" or "points." They resulted originally from a statistical analysis of the "weights" given to procedures, as revealed in physicians' normal and customary charges. On completion, they are, in effect, reflections of the time and effort expended to perform such services, as well as the experience and competence of physicians who provide them.

*What Is the First Step in a Relative Value Study?*—The first step is to establish a complete listing of medical, surgical, radiologic, pathologic, and other procedures. For this purpose, the American Medical Association has adopted the listing of 1,900 procedures developed by the California Medical Association. All state medical associations interested in such a study have been urged to do the same, with such modifications as local situations may dictate.

*What Is the Second Step?*—The next step is to develop a series of code numbers to be assigned to the list of procedures. Again, to permit easy identification and comparison, the A.M.A. has accepted the code used in the California Study. Additional code numbers are added as new procedures are developed.

*What Is the Third Step?*—A survey of physicians' charges is necessary. This may include all doctors, or a selected sample, in the region or state. The original survey generally includes all physicians. The reviews made at intervals usually include random or selected samples or review with representative groups of physicians.

*Are All 1,900 Procedures Used in the*

*Survey?*—The California Medical Association has proved over a period of years that this is not necessary. A special selection of some 400 procedures is now made which can be used to translate or interpolate the data collected into unit or point values for all other procedures. These selected procedures actually represent the great majority of the total charges by all physicians.

*How Are the Units or Points Assigned?*—When the survey data is in, the charges for each procedure are arranged by value, from the lowest to the highest. The top and bottom 10% are then deleted, since they usually represent the rare charge or the response of some individuals who basically are opposed to the concept or conduct of such a study. The average is determined for the remaining 80%. The averages of all procedures are then converted to unit or point values.

This is done by selecting the most common procedure, such as an office call, and giving it a unit of value of 1, then determining the remainder of the unit values by a simple division. For example, if an office call is $4, a tonsillectomy is $60 and an appendectomy is $200; since the office call is 1, the tonsillectomy is assigned a unit value of 15 (4 into 60), and the appendectomy a unit value of 50 (4 into 200). This is repeated for all procedures.

*Are Various Divisions of Medicine Represented in a Relative Value Study?*—Various divisions usually are represented under one of the major divisions: (1) medicine, (2) surgery, (3) radiology, (4) pathology or laboratory. The relative values of units or points may be established for each division separately (segmented) or for all divisions jointly (unsegmented). In other words, the office call may be the base for one or more of the divisions. If it is for only one, then some other common procedure must be selected for the division which is separated. For various reasons, the segmented study is preferred.

It should be pointed out here that committees of various specialties are used throughout the study in order to maintain proper balance between procedures and to add practical evaluation to statistical data.

*How Are These Relative Values Translated into Fees?*—In a sense, this is accomplished by reversing the procedure by which they were established, e.g., multiplying instead of dividing. Actually, however, it is necessary to establish what is called "conversion factors" or "coefficients." Again, we usually start with a simple, much-utilized procedure, such as a home or office call or a tonsillectomy or an appendectomy. If we use a coefficient of 4, the example used before will result in the same fees—$4.00, $60.00, $200.00. The coefficient then is that dollar amount necessary to convert the relative values into fees suitable to meet the situation for which conversion is desired. If the purpose of conversion is to provide a prepayment plan with a schedule for a group with an average income equal to that of the community, then the coefficient should be such as to arrive at that average. If a group's average income were $4,000 or the same as that of the community, and the usual office call were $4.00, a coefficient of 4 should be used. If the groups' average income were $8,000 and the usual office call for this group were $5.00, a coefficient of 5 should be used. This same procedure is followed with varying income groups.

*Isn't This a Round-About Way to Determine Fees?*—The answer is yes, but it begins to make some sense of doctors' fees and of schedules developed by insurers' and third parties' paying premiums or fees directly. There are many examples of its use.

1) The public will know what percentage of the bill they are insured against, and can buy insurance accordingly.

2) The profession can cooperate with prepayment plans in covering groups with varying incomes.

3) Individual physicians can develop their own fees with some relationship to each other and to time, effort, experience, and costs involved.

4) By using different coefficients for the different branches of medicine, it is possible to account for differentials in overhead costs and still keep them all in the same program.

Many other examples or questions could be posed. Even then, why go to all this trouble? The answer is quoted from the Report of the Committee on Medical Practice.

The Committee is of the opinion that the need for such a study or studies is apparent and demonstrable in the light of current developments. It is also of the opinion that unless a study or studies of this type are made in the very near future and adopted by the medical profession, medicine runs the risk of alienating public opinion and losing its bargaining position with other agencies, private and governmental, which are engaged in financing the cost of medical care to the American public. Last, and by no means least, if medicine does not undertake this activity, it may be done by others who are much less qualified.

# Editorial

## The Inquiring Students

Our Association is concerned about the academic qualifications of students entering schools of veterinary medicine and about recruitment of superior students. This is evidenced in the pages of our publications, in the speeches made by our officers, and in the deliberations of our Executive Board and our Councils.

But where are these students? How can we determine who they are and how can we reach them? Some of them may be contacting us without realizing that veterinary medicine offers a potential career, and we could easily overlook the recruitment opportunity.

The AVMA office receives many letters from high school students who apparently are preparing science projects and need much help. For example, here are some typical requests.

Send me all you have on animal psychology.

What are the effects of alcoholic diets given to guinea pigs?

What procedures must I use in order to identify the various chemicals in the stomach of the dog?

How can the stages of pregnancy in animals and human beings be compared?

Send me any material on rabbit blood compared to human blood and tell me where I can obtain atropine poison for injection into rabbits for the purpose of stimulating resistance.

Send me material, pictures, suggestions, or information on the undeveloped organs of a premature calf.

That a formidable amount of staff time could be spent in answering such letters is evident but not germane to the present discussion. Some of the individuals writing such letters may be exceptionally talented science students who should be encouraged to consider veterinary medicine as a career. Perhaps they've thought only of medical sciences other than ours.

When a student's letter is referred for reply to the veterinary school of the veterinary science department of the state in which he lives, we hope that helpful materials or suggestions will be furnished. It is also hoped that the student will receive some information about the nearest veterinary school or at least obtain a favorable image of veterinary medicine. If he is referred also to a veterinarian in his community, so much the better. Few recruiting efforts could be as effective as the personal contact between a student and a veterinarian willing to discuss a science project with him. The contact might even be mutually stimulating.

### Say It Better • • •

Jargon should be avoided, especially in scientific publications that are frequently translated into other languages. Although jargon may save space in writing and often permits a speaker to express his thoughts in fewer words, it is slang, nevertheless, and cannot be expected to contribute to clarity. It is definitely not the mark of a careful, well-educated scientist.

Shown below are some examples of jargon found in veterinary literature.

| Jargon | Preferred |
|---|---|
| blood picture | hemograms; blood studies |
| killed vaccine | bacterin; killed-virus vaccine |
| live vaccine | live virus vaccine |
| supernate | supernatant fluid |
| films; x-rays | radiographs |
| animals were bled | blood samples were obtained |
| animals put on antibiotics | animals given antibiotics |
| cows run on pasture | cows pastured |
| dry cows | nonlactating cows |
| red cells | erythrocytes; red blood cells |
| there was no pathology | there were no lesions; there were no pathologic changes |

# from the *Research Journal*

### Pendulous Crops in Turkeys

In turkeys with pendulous crops, degeneration is present in the striated muscle that supports the crop. Similar areas of degeneration are present in the muscles throughout the body. It is suggested that an enlarged crop results from the stretching of these degenerating muscle fibers. The etiology of this muscle necrosis is not known; however, studies are being made on this phase of the problem. The anatomic features of the muscle that supports the crop and the pathologic characteristics of the muscle degeneration were determined.—[*R. H. Rigdon, T. M. Ferguson, and J. R. Couch: Pendulous Crops in Turkeys—An Anatomic and Pathologic Study. Am. J. Vet. Res., 21, (Nov., 1960): 979-986.*]

### Organomercurial Compounds

N-(ethylmercuri)-p-toluenesulfonanilide (EMTS) produced signs of central nervous system or gastrointestinal disturbance, or both, in cattle. The nature of the signs depended on the rate of administration. In absolute amounts, the absorption rate of EMTS increased at an increasing rate. Logarithmically, there was a fixed rate for a given dose which increased linearly with increased dosage. Following a single administration, the compound reached a peak concentration in the blood in approximately 30 hours. It was transported by the plasma but chiefly by the red blood cells; *in vitro*, 1 M of plasma albumin bound with 2 M of EMTS. It was unequally distributed throughout the body and reached its greatest concentration in the kidneys. It caused progressive degenerative changes in the heart, moderate hypoalbuminemia, and a reduced blood albumin/globulin ratio. It produced diffuse lesions in the cord, cerebellum, and cerebrum and caused glomerulonephritis. The possible biological significance of the alkyl methoxy radical in the molecules of certain organomercurial compounds was considered.—[*W. T. Oliver and N. Platonow: Studies on the Pharmacology of N-(ethylmercuri)-p-toluenesulfonanilide. Am. J. Vet. Res., 21, (Sept., 1960): 906-916.*]

### Bromsulfophthalein Liver Function Test in Dogs

Bromsulfophthalein (BSP) dye retention was determined, following Hepler's procedure, and pathologic evaluation made in 85 dogs. Fourteen dogs were normal; 5 had been given carbon tetrachloride; 35 had been given other drugs; 20 had clinical signs of distemper complex; 6 had been inoculated with canine infectious hepatitis virus, and 5 were pyretic only. The normal limit of retention was 1.5%; retentions between 1.5 and 4.0% were considered suspicious and above 4.0% was considered frankly abnormal.

Reciprocal agreement between retained dye and hepatic alteration was inconsistent, especially at the lower range of retention. The 2 factors were generally but not uniformly correlative in the higher or abnormal range. The test was most sensitive and correlative in acute hepatopathy.

When used in toxicopathologic evaluation of drugs, the test results should be interpreted with caution. Cardiovascular collapse, without liver lesions, caused excessively high dye retention. Pathologic states in other organs and tissues, including reticuloendothelial tissue, appeared inconsequential in relation to retained BSP. Fever did not in itself cause elevated dye retention.—[*E. John Larson and C. C. Morrill: Evaluation of the Bromsulfophthalein Liver Function Test in the Dog. Am. J. Vet. Res., 21, (Nov., 1960): 949-957.*]

## Porcine Enterovirus Plaque Formation

Some variables influencing the formation of plaques by a porcine enterovirus, tentatively designated ECPO-1, on primary porcine kidney cells were investigated. The results indicated that the rate of virus adsorption was directly related to the temperature of incubation, and inversely related to the volume of inoculum. Approximately 71% of the viable virus particles were adsorbed after 15 minutes of incubation at 37 C. The majority of the unadsorbed virus particles, at the time the agar overlay was added, diffused through the agar and produced plaques. Various concentrations of bovine serum in agar overlay and in virus diluents did not effect the plating efficiency. The concentration of neutral red in the agar overlay was found to be important in determining the size and number of plaques.—[*K. V. Singh and E. H. Bohl: Studies on Some of the Variables Associated with the Formation of Plaques by the ECPO-1 Virus. Am. J. Vet. Res., 21, (Nov., 1960): 1114-1118.*]

## Glycine Metabolism in the Dairy Cow

Three dairy cows were given glycine-1-$C^{14}$ intravenously, and the radioactivity in the pulmonary $CO_2$ and the urinary hippuric acid-glycine was measured. The time curves of the standard specific activities of the $CO_2$ and hippurate glycine were expressed both as cumulative excretion and, mathematically, as the sum of several "first order" components. Two lactating cows and 1 nonlactating cow expired 20.1, 20.1, and 23.5%, respectively, of the injected dose of glycine-1-$C^{14}$ as respiratory $CO_2$ within 32 hours after the injection. Approximately 7 and 9%, respectively, of the injected dose of glycine-$C^{14}$ was excreted as urinary hippuric acid-glycine by 2 lactating dairy cows within 24 hours after injection. A nonlactating cow excreted approximately 5% of the injected glycine as hippuric acid by 24 hours postinjection.—[*C. E. Cornelius, A. L. Black, and Max Kleiber. Studies of Glycine-1-$C^{14}$ Metabolism in the Dairy Cow—Urinary Hippuric Acid and Pulmonary $CO_2$ Excretion. Am. J. Vet. Res., 21, (Nov., 1960): 1033-1039.*]

## Lymphoid Foci in Chickens

Chickens, as well as birds in general, commonly have ectopic lymphoid foci scattered through the various organs of the body. Previous studies on these areas have indicated that these are abnormal structures in the sense that they arise as a product of the defense reactivity of the chicken rather than as a "normal" preformed element of the body.

Five groups of chickens were used in the experiment on the effects of heat treatment on number of lymphoid areas in liver and pancreas. Body temperature was determined daily in group 1 birds from 1 to 29 days of age, group 2 birds were controls, group 3 birds were given 3 treatments with temperatures of 108.2 to 109.3 F., group 4 birds were given 6 treatments, and group 5 birds were given 9 treatments. The number of lymphoid areas, in the pancreas was reduced significantly in birds of each treated group as compared to control birds. It was also reduced in the liver, but the difference was not significant.

The average body temperature on 1 day of age was 104.2 F.; at 8 days, 107.6 F.; at 15 days, 108.6 F.; and at 29 days, 107.6 F. These values were higher than those given in the literature.—[*E. M. Denington and Alfred M. Lucas: Influence of Heat Treatment on the Number of Ectopic Lymphoid Foci in Chickens. Am. J. Vet. Res., 21, (Sept., 1960): 734-739.*]

### Differentiation of Microfilariae

A method for vital staining of microfilariae with acridine orange has provided means for a rapid scanning of whole blood suspensions to detect the viable microfilariae with the aid of dark-ground illumination and glass color filters. Differentiation of viable microfilariae of *Dirofilaria immitis, Dirofilaria uniformis,* and Dipetalonema was further accomplished with the closely related dye coriphosphine O. The cytochemical differences among these microfilariae may imply that there are morphologic and physiologic differences as well. A comparative study of 282 canine blood samples indicated that use of the vital staining technique detected more positive blood samples than the modified Knott method.—[*N. Rothstein and M. L. Brown: Vital Staining and Differentiation of Microfilariae. Am. J. Vet. Res., 21, (Nov., 1960): 1090-1094.*]

### Oral and Pharyngeal Neoplasms in Dogs

Neoplasms of the mouth and pharynx were discussed under the following headings: age, breed and sex incidence; site of origin; biological behavior; gross and microscopic pathology; diagnosis; prognosis; and treatment. The 4 most common neoplasms of the mouth and pharynx were epidermoid carcinoma (41.5%), malignant melanoma (33.1%), neurogenic sarcoma (13.8%), and malignant lymphoma (4.6%). The frequency of neoplastic involvement of the various sites was gingiva (48.4%), tonsils (25.4%), labial mucosa (9.2%), hard and soft palate combined (7.8%), buccal mucosa (5.4%), tongue (1.5%), pharynx (1.5%), and enamel organ (0.76%). There were 88 neoplasms in males and 32 in females, a 2.75:1 ratio.—[*R. S. Brodey: A Clinical and Pathologic Study of Neoplasms of the Mouth and Pharynx in the Dog. Am. J. Vet. Res., 21, (Sept., 1960): 787-812.*]

## New Books

### Farm Animals in Health and Disease

This book provides a survey of diseases of farm animals, particularly for the benefit of farmers and agricultural students in Great Britain. The first 5 chapters deal with the general principles of health and disease, costs of disease, methods of control, and the future as it relates to livestock health. Included in abridged form are sections on the anatomy and physiology of animals, causative agents of disease, nutritional factors, and various laboratory techniques.

Specific diseases of cattle, sheep, goats, pigs, horses, poultry, and rabbits are arranged according to species. The descriptions are adequate for the lay reader. Specific instructions for home medication of animals are not included. The book is not sufficiently detailed to serve as a reference manual for veterinarians.

The book is clearly written and well illustrated and can be recommended for the farmer in this country.—[*Farm Animals in Health and Disease. By W. R. Wooldridge. 533 pages; illustrated. Charles C Thomas, Springfield, Ill. 1960. Price $8.50.*]

# NEWS

## Awards Administered by AVMA—Nominations Invited

Members of the AVMA are invited to submit nominations for the following Awards to be administered by the AVMA in 1961. Formal presentation of these Awards will be made at the AVMA's Ninety-Eighth Annual Convention in Detroit, Mich., August 20-24.

### Deadline and Rules for Submission of Candidates

Nominations for any of the Awards administered by the AVMA should be submitted to the Committee on Awards, AVMA, 600 S. Michigan Ave., Chicago 5, Ill., *not later than May 15, 1961.*

Each nomination should contain a brief account of the nominee's accomplishments and qualifications for the Award in question, as well as a short biographical sketch of his professional background and experience. For further details on each Award, see the summaries listed below.

### AVMA Award

This Award is designed to recognize distinguished members of the Association who have contributed to the advancement of veterinary medicine in its organizational aspects. Veterinarians who have exerted outstanding leadership in the building of stronger local, state, or regional associations or have contributed to the improvement of the national organization are eligible. The award consists of a gold key and a certificate.

Below is a list of former AVMA Award winners:

1943—John R. Mohler
1950—L. A. Merillat
1951—A. H. Quin
1952—Adam A. Husman
1953—George W. Gillie
1954—N. J. Miller
1955—C. W. Bower
1956—R. J. Foster
1957—O. H. Person
1958—J. A. McCallam
1959—J. G. Hardenbergh
1960—C. E. DeCamp

### Borden Award and Medal

The Borden Award is given in recognition of "outstanding research contributing to dairy cattle disease control." It was instituted by the Borden Company Foundation in 1936, to stimulate research and to recognize achievements in the fields of chemistry, biochemistry, human nutrition, animal physiology and genetics, dairy production and manufacture, pediatrics, and related sciences.

A nominee for the Award must have published the results of his work in recognized scientific journals. The AVMA Awards Committee furnishes the Borden Company Foundation with a pertinent bibliography of the proposed recipient's published work, as well as the candidates qualifications.

The Award consists of a gold medal and $1,000. Following is the list of past recipients:

1944—I. Forest Huddleson
1945—W. L. Boyd
1946—W. E. Cotton
1947—Jacob Traum
1948—A. F. Schalk
1949—R. R. Birch
1950—James Farquharson
1951—L. A. Klein
1952—Ralph B. Little
1953—George H. Hart
1954—M. G. Fincher
1955—H. E. Kingman, Sr.
1956—Herbert L. Gilman
1957—Samuel H. McNutt
1958—Chester A. Manthei
1959—Peter Olafson
1960—H. H. Dukes

### Gaines Award

To foster progress in small animal medicine and surgery, the Gaines Dog Research Center annually offers the Gaines Award and Medal to a veterinarian whose work (within the preceding 5 years) in either clinical research or the basic sciences is judged to have contributed significantly to the advancement of the field.

Each nomination should include a description of the work performed, its contributions to small animal medicine and surgery, a pertinent bibliography, and suitable biographic information.

The work of the nominated veterinarian should be known either by publication in recognized veterinary periodicals, by presentation at professional meetings, or both.

The award consists of a gold medal and $1,000.

Since 1957, the following veterinarians have received the Gaines Award:

1958—Frank Kral
1959—Wade O. Brinker
1960—D. K. Detweiler

**Practitioner Research Award**

Established in 1955, this Award was proposed by the AVMA Research Council to encourage clinical research in veterinary science by veterinary practitioners.

The plaque signifying the Award is presented to a practitioner who has carried out the major portion of an important phase of a research problem and has published the results *while engaged in practice.* Former recipients of the Award are:

| | |
|---|---|
| 1956—Wayne H. Riser | 1957—W. E. Magrane |
| 1959—Edwin A. Churchill | 1960—G. T. Easley |

**Twelfth International Veterinary Congress Prize**

The Executive Board, serving as a committee on awards, recommends that recipients of this Award be selected on the basis of contributions to veterinary science that are international in scope. This would include recognition of outstanding service by veterinarians in countries other than the United States and Canada, as well as veterinarians in this country who have contributed to international understanding of veterinary science.

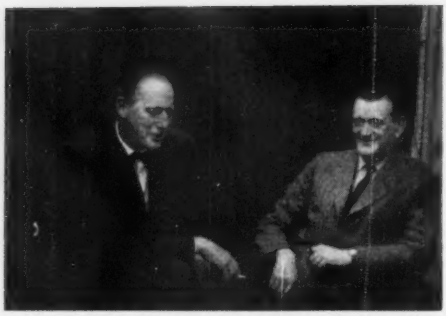
Established in 1936, the Award consists of a certificate and a cash presentation. Former Prize winners are:

| | |
|---|---|
| 1937—Denny H. Udall | 1949—Gerard Dikmans |
| 1938—George H. Hart | 1950—Nelson S. Mayo |
| 1939—John R. Mohler | 1951—R. S. Sugg |
| 1940—I. Forest Huddleson | 1952—Charles E. Cotton |
| 1941—Adolph Eichhorn | 1953—L. Van Es |
| 1942—R. A. Kelser | 1954—F. W. Schofield |
| 1943—Otto Stader | 1955—B. T. Simms |
| 1944—D. F. Luckey | 1956—Hadleigh Marsh |
| 1945—L. A. Merillat | 1957—Edward Records |
| 1946—T. H. Ferguson | 1958—Harry W. Schoening |
| 1947—W. J. Butler | 1959—William H. Feldman |
| 1948—A. E. Cameron | 1960—W. A. Hagan |

## Veterinarians from Sweden Visit AVMA Offices

"In Sweden, we have eradicated most livestock diseases," said 2 veterinarians from Sweden who recently visited the AVMA central offices in Chicago. "We don't have any exotic diseases either," they said.

The veterinarians were Dr. Gosta Bjorkman, veterinary director of the Royal Veterinary Board, Stockholm, and Dr. Torsten Blom, chief of the Hygienic Department of the Board. They were commissioned by the Swedish government to tour the United States and Canada to inspect slaughterhouses for beef and poultry and to learn about hog cholera and poultry disease problems in these countries.



**Dr. Gosta Bjorkman (left) and Dr. Torsten Blom discuss livestock disease eradication at the AVMA central office.**

The veterinarians said that at one time hog cholera existed in Sweden, but that it has been eradicated. They said that bovine tuberculosis, Newcastle disease, and rabies have also been eradicated.

"We have small outbreaks of some of these diseases in herds from time to time," they said, "but these are easily controlled. The diseases usually come into the country from across the borders of neighboring countries."

Because of the relatively disease-free status of Sweden, the veterinarians said that the country must be careful about imports. Sweden is looking for an entire area that is free of important livestock diseases from which to import livestock and products.

The veterinarians were in the United States and Canada for about 4 weeks. They said they planned to return to Sweden about March 4 or 5. Their tour took them to Washington, D.C., Kansas City, Mo., Omaha, Neb., Des Moines, Iowa, Annapolis, Md., Chicago, Ill., and to Maine, Georgia, North Carolina, Ottawa, Montreal, and Quebec.

## Dr. Smithcors to Join MVP Staff

Dr. J. F. Smithcors (COR '45) will join the editorial staff of *Modern Veterinary Practice* on July 1, 1961. He has been assistant professor of anatomy and associate professor and lecturer in veterinary history at Michigan State University, College of Veterinary Medicine, since 1945. Dr. Smithcors was awarded his B.S. degree in dairy hus-

bandry at Rutgers University in 1941; his M.S. degree in endocrinology at Cornell University in 1943; and his Ph.D. degree in animal breeding at MSU in 1951.

Dr. Smithcors has written more than 50 scientific and historical papers for leading science and veterinary journals. He wrote *Evolution of the Veterinary Art*, a history text, in 1957, and is recipient of grants from the AVMA for his work on veterinary history and from the American Philosophical Society for his work on the history of colonial veterinary medicine. He writes the JOURNAL page entitled "The First 100 Years," scheduled to run until the AVMA centennial in 1963, the year in which his next book on veterinary history is expected to be published.

Dr. Smithcors was chairman of the AVMA Committee on History from 1956 to 1959, and is the incumbent president, American Veterinary Historical Society.

## American Veterinary Radiology Society Meets

A meeting of the American Veterinary Radiology Society was held in conjunction with the Indiana V.M.A. meeting in Indianapolis, Ind., January 10.

At the meeting, Dr. Gus W. Thornton (OKL '57) of the Angell Memorial Animal Hospital staff showed intravenous pyelograms. Also on the program, Dr. John A. Campbell, professor and chairman, Department of Radiology, School of Medicine, Indiana University, spoke on radiation dangers. He talked about different types of radiation including genetic radiation damage.

Dr. William H. Rhodes (UP '55), University of Pennsylvania, and past-president of A.V.R.S., presented an illustrated discussion on degenerative joint disease. He explained some of the joint degenerative conditions that arise from disease and from age.

Dr. Griselda Hanlin, University of Minnesota, discussed normal and abnormal bone growth in dogs. She has been gathering information for a report on the subject from almost 1,000 cases. The differences she has observed in closure time have been influenced by age, breed, and different bones in the body.

A highlight of the meeting was a "film-reading" session. Radiographs on which a diagnosis had definitely been made were shown, and members of the audience were asked to interpret them. There was also a workshop session held during the meeting for practitioners who felt they needed guidance in interpretation of radiographs.

## Canadian Veterinarian Joins Staff of Pan American Sanitary Bureau

Dr. David Garrick (ONT '40), Canadian public health veterinarian of Shanty Bay, Ont., has been appointed to the staff of the Pan American Sanitary Bureau, Regional Office for the Americas of the World Health Organization.

Dr. Garrick will be assigned to the Republic of Panama as an international consultant in veterinary public health services. His duties will include advising the Panamanian government on food hygiene, the prevention and control of the zoonoses, and other aspects of preventive medicine.

From 1948 until receiving his new appointment, Dr. Garrick was a public health veterinarian with the Simcoe County Health Unit, Barrie, Ont. From 1947 to 1948 he practiced veterinary medicine in Elizabethtown, Ky. During 1946 he was a veterinarian with United Nations Relief and Rehabilitation Adminstration in various parts of the world. He was an instructor at Ontario Veterinary College, Guelph, from 1945 to 1946.

Dr. Garrick received his D.V.P.H. degree from the University of Toronto in 1947.

## USDA Gives Grants to Turkish and Polish Institutions

The USDA awarded 4 research grants totalling more than $130,000 to Turkish and Polish research institutions last February. Three of the grants were for animal disease studies in Turkey, and the other was for a 5-year study in Poland of hereditary influences on the color of pork.

One grant of $11,572 will support a 2-year investigation of the giant liver fluke, a parasite of cattle, sheep, goats, and buffalo of Turkey. Another grant to Turkey of $51,383 is for a 5-year study of the causes

of bovine urinary bladder tumors, and the third, $25,953, is for a 5-year study of foot-and-mouth disease in Turkey. These grants were made to Ankara University, Ankara.

The grant to Poland for $42,783 was made to the Institute of Animal Physiology and Nutrition at the Polish Academy of Sciences, Warsaw.

The research will be administered by the USDA's Agricultural Research Service foreign research and technical programs division.

### Dr. R. A. Moody to Serve in Chicago

Dr. R. A. Moody (OSU '37) has recently been promoted to the position of assistant inspector in charge at the Chicago, Ill., sta-

Dr. Robert A. Moody

tion of the Meat Inspection Division, USDA. He succeeds Dr. Hyman M. Steinmetz, who has been transferred to Washington, D.C. Dr. Moody went to Chicago from Nampa, Idaho, where he has been the inspector in charge for the past year.

Dr. Moody began his career in meat inspection at Chicago in 1939 and, except for four years in the U.S. Army, he has continuously held supervisory positions at several locations in the United States.

In 1957 Dr. Moody participated in a test series of atomic explosions at Mercury, Nev., as a part of a team which was honored by a Distinguished Service Unit Award.

### Dr. H. M. Steinmetz Promoted by USDA

The Meat Inspection Division of the USDA has recently promoted Dr. Hyman M. Steinmetz to chief staff officer for Ani-

Dr. Hyman M. Steinmetz

mal Foods with headquarters in Washington, D.C. Dr. Steinmetz went to his new assignment from Chicago, Ill., where he had been the assistant inspector in charge for the past year.

Dr. Steinmetz entered the Meat Inspection Service in 1950 at Boston, Mass.; in previous supervisory assignments he was located at Baltimore, Md., and Waterloo, Iowa.

### Correction

Our apologies to Dr. Robert E. Habel, head of the Department of Veterinary Anatomy at Cornell University. In the January 15 issue of the JOURNAL, in which we reported Dr. Habel's appointment as head of the department, we said he received his D.V.M. and M.Sc. degrees from Cornell University. Dr. Habel received these degrees from Ohio State University.

### Dr. K. E. Taylor Promoted by USDA

The Meat Inspection Division of the USDA has recently promoted Dr. Kenneth E. Taylor (KSU '46) to the position of assistant staff officer for Procedures and Training, Washington D.C. Dr. Taylor went to his new assignment from Evansville, Ind., where he had been inspector in charge for almost 2 years.

Dr. Kenneth E. Taylor

Earlier assignments were held by Dr. Taylor at South St. Paul, Minn., Omaha, Neb., and Lake Charles, La. He entered the Meat Inspection Service in 1947 at Omaha, Neb.

### Dr. Benjamin C. Pier Retires

Dr. Benjamin C. Pier (COL '25), one of the pioneers in government poultry inspection work, retired from USDA services Dec. 31, 1960.

One of the early chiefs of the federal poultry inspection service, Dr. Pier had been assistant to the director, Poultry Division, Agricultural Marketing Service. He was appointed to this position in 1957 to plan and direct the training program for the poultry inspection service. Under his direction, a large corps of new poultry inspectors was hired and trained.

Dr. Benjamin C. Pier

Dr. Pier began his poultry inspection work in New York City in 1927 and worked as a licensed poultry inspector in New York and Delaware from that time until 1940 when he went to Washington, D.C., as eastern area supervisor of the poultry inspection service. In February, 1943, he was appointed chief of the Poultry Inspection Section, a position he held until 1954 when he was assigned to the Poultry Grading Branch to supervise a program for the inspection and approval of non-federally inspected plants receiving poultry grading service.

Dr. Pier is a member of the AVMA and the American Public Health Association.

## *Among the States and Provinces*

### Arkansas

ARKANSAS V.M.A. SUPPORTS NEW VETERINARY PRACTICE ACT.—Highlight of the annual business session of the Arkansas V.M.A. at its convention January 22-24, was a discussion of the association's support of a new

veterinary practice act up for consideration by the state's legislature.

Other associations in the state that are supporting, or at least not opposing, the new practice act are the Arkansas Medical Association, the Arkansas Dental Association, the Arkansas Farm Bureau, and the Arkansas Cattlemen's Association.

The act was defeated in the last session of the Arkansas legislature.

Officers installed at the meeting are: Drs. Charles D. Lebahn (KSU '39), Fort Smith, president; James D. Bilberry (AUB '54), McGehee, vice-president; and Thayer D. Hendrickson (TEX '46), Little Rock, secretary-treasurer. Dr. William L. Thomas (AUB '47), Little Rock, is the AVMA delegate. A total of 75 veterinarians attended the convention.

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DR. O. H. MEINECKE NAMED VETERINARIAN OF THE YEAR.—Dr. Orval H. Meinecke (KSU '42), Hot Springs, has been selected "Arkansas Veterinarian of the Year" for 1960 by the Arkansas V.M.A. His selection was announced on Jan. 23, 1961, at the association's annual meeting.

**Dr. Orval H. Meinecke, Arkansas Veterinarian of the Year**

Dr. Meinecke is a general practitioner and has practiced in Arkansas since March, 1946. He is a past-president of the Arkansas V.M.A.

Recently Dr. Meinecke established a sound liaison between the Arkansas Farm Bureau and the Arkansas V.M.A., a liaison that the Arkansas V.M.A. feels will benefit not only the profession, but the livestock owners as well.

## California

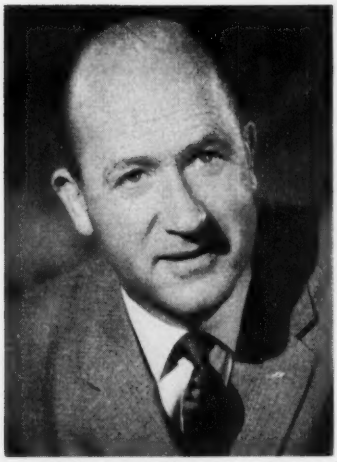
CALIFORNIA V.M.A. APPLIES "PREVENTIVE MEDICINE" TO PROBLEMS OF ETHICS.—In an effort to prevent problems before they occur, the Ethics Committee of the California V.M.A. has embarked on several projects to improve the intraprofessional relationships of the association's members.

The Ethics Committee Chairman, Dr. R. L. Collinson (COL '42), said the committee feels more effort should be directed toward preventing problems of ethics than toward policing the membership or acting on misconduct after it has occurred. The committee asked itself why these problems arise and decided it was because of lack of understanding. It built its preventive program around this theory.

To promote better intraprofessional relations, the committee, with the approval of the executive committee, designed stickers saying "Have I had lunch with a colleague this month? Have I telephoned a colleague this week?" to be placed on the platform above the dial on all telephones belonging to veterinarians. The sticker was distributed by detail men to members and nonmembers. State and federal regulatory officials distributed the stickers to all of their personnel.

Mr. Kenneth Humphreys, executive secretary of the California V.M.A., reports that several members have related instances to him of how the stickers have stimulated improvement of relations with fellow veterinarians. Association membership has risen because of the application of a block of regulatory men who attribute their decision to join directly to the efforts of the Ethics Committee.

Another project of the Ethics Committee to further intraprofessional relations was the installation of a message center at the annual midwinter conference of the California V.M.A. The message center, similar to those used at the political conventions last summer, was equipped with telephone service and a public address system. It was placed



**Dr. R. L. Collinson, Chairman of the California V.M.A. Committee on Ethics**

near the registration desk. All veterinarians in the state were given the number of the message center before the conference. Any registrant could be quickly contacted by his home office if a person-to-person call was placed to him at the message center number. Telephone operators took the calls, immediately carried messages to rooms where veterinarians were attending sessions, and aided in returning the calls. This was the first time a service of this type was provided at any professional convention in California.

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DR. DONALD E. JASPER HONORED BY CALIFORNIA V.M.A.—Dr. Donald E. Jasper (WSU '42), dean of the School of Veterinary Medicine at the University of California, was presented with a bronze plaque by the California V.M.A. in gratitude for his contributions to the veterinary profession.

The plaque, presented to Dr. Jasper during the association's midwinter conference, was inscribed: "To Dean Donald E. Jasper —in sincere appreciation by a grateful association for his loyal membership, interest, devotion, untiring cooperation on committee assignments, and for his dedication to the veterinary profession."

Dr. E. R. Braun (WSU '29), California V.M.A. president, presented the plaque to Dr. Jasper.

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REPORT ON ECONOMICS OF LARGE ANIMAL PRACTICE AVAILABLE FROM CALIFORNIA V.M.A. —A report entitled "The Economic Status of Large Animal Practice," which was presented before the California V.M.A. House of Delegates in January, 1960, by the Public and Professional Relations Committee, is available upon request from the association.

The report stresses the need for large animal practitioners, pointing out that a high percentage of graduates in California are entering small animal practices. It urges large animal practitioners to establish a reputation with the livestock industries and the public as authoritative, professional people. It discusses problems facing the large animal practitioner because of the over-the-counter sale of drugs and the practice of veterinary medicine by unqualified people. It suggests as a solution to these problems, not the enactment of new laws, but the enforcement of laws already in existence.

To obtain copies of the report write to Mr. Kenneth Humphreys, Executive Secretary, California Veterinary Medical Association, 3004 Sixteenth St., Rooms 301-303, San Francisco 3, Calif.

S/DR. JOHN CARRICABURU, *chairman*
Public and Professional Relations
Committee

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ALAMEDA-CONTRA COSTA V.M.A. PROPOSES REVISED CONSTITUTION.—The constitution committee of the Alameda-Contra Costa V.M.A. has recently completed suggested revisions to their constitution. The new document remains to be approved by the membership.

Major changes suggested are:

• A provision for honorary and retired members.

• A longer term of office for the treasurer and a clearer definition of duties of other officers. The committee felt that if the treasurer's term was longer than 1 year, management of that office would be more efficient.

• A provision for a part-time, paid executive secretary. The committee felt the business of the association would soon require the services of an executive secretary.

Committee members were: Drs. Irving M. Roberts (MSU '41), Oakland, chairman; Russell P. Cope (KSU '36), Berkeley; and Charles J. Parshall (COR '28), Hayward.

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ALAMEDA-CONTRA COSTA V.M.A. INSTALLS NEW OFFICERS.—At the last meeting of the Alameda-Contra Costa V.M.A. the associa-

tion's new officers were installed. They are: Drs. John Blackard (CAL '53), El Sobrante, president; Larry Proctor (CAL '54), Concord, vice-president; Don Martin (WSU '53), Oakland, secretary; and Clyde Brown (KSU '44), Hayward, treasurer.

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SANTA BARBARA AND VENTURA V.M.A. ELECTS NEW OFFICERS.—The newly elected officers of the Santa Barbara and Ventura V.M.A. are: Drs. Donald E. Hur (CAL '57), Santa Barbara, president; Charles Nelson (CAL '55), Fillmore, vice-president; and Donald W. Jolly (LON '38), Santa Barbara, secretary-treasurer.

## Delaware

DELAWARE V.M.A. INSTALLS NEW OFFICERS.—Officers installed at the annual meeting of the Delaware V.M.A. Dec. 7, 1960 are: Drs. William V. Gallery (UP '51), Wilmington, president; Morris L. Zurkow (UP '10), Dover, president-elect; and William J. Benton (GA '56), Newark, secretary-treasurer.

## Florida

DR. C. L. CAMPBELL RE-APPOINTED STATE VETERINARIAN, GIVEN NEW RESPONIBILITY.—Dr. C. L. Campbell (OSU '45), Florida State Veterinarian since 1953, has been re-appointed and named director of the Division of Animal Industry in the state's newly-reorganized agriculture department.

Dr. Campbell was one of 6 specialists in the United States appointed in mid-1950 to review and evaluate federal procedures for protecting the nation's livestock against diseases of foreign origin and for exportation of diseased livestock and poultry.

In 1945 he was employed by the Florida Livestock Sanitary Board, serving successively in general field work and inspections; as supervisor of fever tick eradication for 18 months in southeastern Florida; and, from 1948 to 1952, in a dual capacity as director of tuberculosis and brucellosis control and assistant to the state veterinarian, the late Dr. J. V. Knapp.

After Dr. Knapp's death in June, 1952, Dr. Campbell was acting state veterinarian for a short time and was appointed state veterinarian the following year.

**Dr. C. L. Campbell**

Dr. Campbell is a member of the AVMA, the Florida State V.M.A., and the United States Livestock Sanitary Association. He also is a member of the National Assembly of State Veterinarians and served as president of this group in 1957.

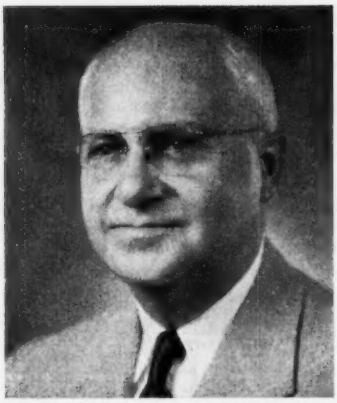
## Georgia

GREATER ATLANTA V.M.S. ELECTS NEW OFFICERS.—New officers elected at the December meeting of the Greater Atlanta V.M.S. are: Drs. W. V. Smith (GA '50), Smyrna, president; J. E. Severin (OSU '16), Atlanta, vice-president; and C. A. Greenig (GA '51), Decatur, secretary-treasurer.

## Illinois

ILLINOIS STATE V.M.A. SELECTS VETERINARIAN OF THE YEAR.—Dr. A. K. Merriman (IND '21), superintendent, Illinois Division of Livestock Industry, was elected Veterinarian of the Year by the Illinois State V.M.A. on Jan. 10, 1961.

Dr. Merriman received this honor for his many contributions to the veterinary profession and to the animal industry in the State of Illinois.



**Dr. A. K. Merriman, Illinois Veterinarian of the Year**

Dr. Merriman is 3rd vice-president of the United States Livestock Sanitary Association. He is past-president of the Illinois State V.M.A. and a member of the Illinois State Livestock Advisory Board.

Official recognition was given to Dr. Merriman at the annual convention of the Illinois State V.M.A. Feb. 20-22, 1961, in Chicago. He was presented with an award designating him as the "Illinois Veterinarian of the Year."

## Iowa

Iowa V.M.A. Votes to Co-Sponsor District Meetings.—The Executive Board of the Iowa V.M.A. voted at its meeting Jan. 19, 1961, in Des Moines, in favor of the association's co-sponsoring district meetings next summer. Other meeting co-sponsors will be the Midwest Feed Manufacturers and the Veterinary Nutritionists.

Officers installed at the 78th annual meeting of the association Jan. 16-18, 1961 are:

**Newly Elected Iowa V.M.A. President Dr. J. A. Henderson (ISU '43) has maintained a general practice in Ankeny, Iowa, for 26 years. He is also a member of the AVMA Council on Veterinary Services.**

**Dr. F. D. Wertman (ISU '40), executive secretary and treasurer of the Iowa V.M.A., has maintained a general practice in Carlisle, Iowa, since 1940.**

Drs. J. A. Henderson (ISU '34), Ankeny, president; F. E. Brutsman (ISU '40), Traer, president-elect; and V. D. Ladwig (ISU '43), Sac City, vice-president.

Dr. C. D. Lee (ISU '27), Ames, was reappointed AVMA delegate, and Dr. F. D. Wertman (ISU '40), Carlisle, was appointed alternate delegate.

There were 590 veterinarians registered for the 3-day convention. Next year the meeting will be held January 16-18 at the Hotel Fort Des Moines, Des Moines.

## Massachusetts

Toxicology Symposium Highlight of Massachusetts V.M.A. Convention.—A symposium entitled "Toxicology—Human and Animal" was the highlight of the annual meeting of the Massachusetts V.M.A. January 18 at East Boston.

"Pesticides help promote health in two important ways," said Dr. Ellsworth H. Wheeler, professor of entomology, University of Massachusetts, one of the 5 speakers on

**Symposium speakers were (left to right): Dr. William H. Drury, Massachusetts Audubon Society; Mr. Mario Boschetti, Massachusetts Department of Public Health; Dr. George A. Michael, Massachusetts Department of Public Health; Dr. E. W. Tucker, president, Massachusetts V.M.A.; Dr. Arthur J. McBay, Massachusetts State Police; and Professor Ellsworth H. Wheeler, University of Massachusetts.**

the symposium. "First, they help control disease vectors such as mosquitoes, flies, and rats; second, they allow the increased production of higher quality food."

He said that today we have over 100,000 registered pesticides containing about 200 basic chemicals designed to kill nuisance and destructive insects, fungi, weeds, and rodents. He stressed the importance of using pesticides correctly. "Like any potentially hazardous substance or device, such as electricity or even a car," he said, "they may cause harm when not properly handled or applied."

Dr. William H. Drury, Jr., director of adult education and research, Massachusetts Audubon Society, discussed the application of pesticides. He cited spraying as being responsible for the loss of much wildlife in Massachusetts.

He said, "Research studies have disclosed a 25% to 75% decline in general wildlife due to present methods of spraying. The number of young that reach maturity is cut down. Fewer eggs are hatched and more of those hatched are crippled or die because food is removed at a critical time in the growth of the young animal. . . . Spraying in our woods and swamps has removed the natural variation of predators. The more spray is used, the more spraying is required. This process tends to create greater and greater insect numbers at a later time."

The measures taken by Massachusetts to protect the public from indiscriminate spraying of pesticides and improper use of chemical additives in foods were described by Dr. George A. Michael, director, Division of Food and Drugs, Massachusetts Department of Public Health.

"All available information on chemical compounds is thoroughly screened, and information is supplied through research conducted by the U.S. Public Health Service and the U.S. Food and Drug Administration. This information is used to insure the maintenance of a nutritious and unadulterated food supply in Massachusetts. We keep a comprehensive file on all chemicals used in pesticides and attempt to control the application of them," Dr. Michael said.

Another symposium speaker, Dr. Arthur J. McBay, supervisor, Chemical Laboratory, Massachusetts State Police, said, "At present there is no provision for determining poison diagnoses in living animals or human beings. To provide for the detection of poison in animals, the veterinary association should establish its own toxicology laboratory. It is futile to expect to obtain this service from existing laboratories."

Contrasting poisoning in human beings with poisoning in animals, he noted that the majority of human cases resulted from alcohol, barbiturates, or carbon monoxide. With the exception of carbon monoxide, these do not constitute a problem in animals. Poisoning in animals, he explained, results for the most part from insecticides, pesticides, fluorides, arsenic, or strychnine.

Mr. Mario Boschetti, sanitary biologist, Massachusetts Department of Public Health, discussed the use of herbicides and chemicals in controlling nuisance aquatic vegetation and reviewed the toxicology. He pointed out that, while some of these chemicals are toxic to human beings, all chemicals are toxic to fish and animal life around the waters. He explained, however, that when chemicals are properly used, the hazards may be eliminated without reducing their efficiency.

**Massachusetts V.M.A. 1961 officers are: (left to right) Drs. Howard C. Adams, second vice-president; E. Erskine Harvey, president; E. W. Tucker, immediate past-president; Harrison B. Siegle, first vice-president; and Morton Wolf, secretary-treasurer.**

Mr. Boschetti alerted the veterinarians to recent legislation, effective Jan. 1, 1961, in Massachusetts, which requires all persons who are qualified to place chemicals in state-controlled waters for control of nuisances to obtain a license from the Department of Public Health. Copper sulfate is the only chemical agent presently approved by the state for controlling the nuisance conditions caused by excessive growths of algae in water supply reservoirs.

Officers of the Massachusetts V.M.A. elected at the meeting are: Drs. E. Erskine Harvey (MSU '27), Greenfield, president; Harrison B. Siegle (MSU '41), Dedham, first vice-president; Howard C. Adams (MID '44), Athol, second vice-president; and Morton Wolf (MSU '44), Hyde Park, secretary-treasurer.

## Michigan

MICHIGAN V.M.A. APPOINTS PUBLIC RELATIONS CONSULTANT.—The Michigan V.M.A. has announced the appointment of Mr. Vic Hurwitz, Detroit, as public relations consultant for the association. Mr. Hurwitz is a graduate of the University of Michigan and is particularly experienced in dealing with the radio, television, and newspaper mediums.

In announcing the appointment, Michigan V.M.A. President Dr. A. R. Wingerter (MSU '37) said that there is a definite need for good public relations in the field of veterinary medicine, and it is hoped that Mr. Hurwitz will fill this need in Michigan.

## New York

HIGHLIGHTS OF CORNELL UNIVERSITY'S CONFERENCE FOR VETERINARIANS.—Cornell University's 53rd annual conference for veterinarians, sponsored by the New York State Veterinary College, was held Jan. 4-6, 1961. Many aspects of veterinary practice were covered during the three-day session. Here are some highlights of conference presentations.

### Small Animal Veterinary Medicine

THORACIC SURGERY

Dr. Robert S. Brodey (ONT '51), University of Pennsylvania, was one of several speakers who discussed medical treatment and surgery for dogs. He said that the practice of small animal medicine has undergone a marked evolution. Until recently most of the thoracic surgery in dogs was being done in the small animal clinics of various veterinary schools, Dr. Brodey said. Now more and more small animal pracitioners are becoming interested in this field and some already are doing this type of surgery.

THE CARDIAC DOG

In discussing diagnosis and treatment of the cardiac patient, Dr. Donald F. Patterson (OKL '54), director of the Heart Station, University of Pennsylvania, reported that signs of cardiac disease have been found in about 10% of the dogs entering Pennsylvania's veterinary clinic. He said that in dogs more than 7 years old studies revealed some form of heart disease in more than 20% of the animals. Congenital heart disease is not uncommon in the dog, Dr. Patterson pointed out. "Most of the malfunctions of the heart seen in man have been observed in the dog."

THYROID FUNCTIONS IN DOGS

Dr. Robert W. Kirk (COR '46), Cornell professor of small animal medicine, reported on research entitled "Estimation of Thyroid Function in Dogs on a Clinical Basis," he conducted in collaboration with Max B. Lombardi, Lima, Peru, a graduate student in physical biology at Cornell.

Dr. Kirk said they studied the thyroid gland uptakes of normal dogs by using radioactive iodine and other tests. They found that the maximum thyroid uptake in normal dogs was reached about 72 hours after the injection of radioiodine. The observed turnover in the thyroid glands of normal dogs was slower than those reported for man, cattle, and swine.

SKELETAL DEVELOPMENT OF THE DOG

"Prenatal Development of the Skeleton of the Dog," was the subject of the presentation made by Dr. Howard E. Evans, Ph.D., professor of veterinary anatomy at Cornell's New York State Veterinary College.

The fetuses taken from purebred Beagles which he has studied represent about 20 litters at gestational ages of 23 to 60 days. "The first bone to appear in the fetal dog is the mandible, a membranous bone which hardens at an age of 30 days when the fetus is about 18 mm. long," Dr. Evans said. The

clavicle, a bone destined to disappear in the adult dog, is the second bone to ossify, and is followed by the appearance of other facial bones which make their appearance almost simultaneously, he said.

By the time 35 days have passed, centers for ribs 2 to 13, the scapula, humerus, radius, ulna, femur, tibia, fibula, and pelvic girdle are apparent. Within 5 days thereafter, centers for vertebras and phalanges appear, followed shortly by the sternum.

At the time of birth the only bones which have not yet ossified are the basihyoid and keratohyoid, the auditory bulla, the carpal elements, the distal tarsal elements, and the bacculum in the male.

#### Large Animal Veterinary Medicine

RADIATION TREATMENT TECHNIQUE

A new type portable therapeutic "boot" that makes it possible to control the dosage and vary the area being treated by radiation on large animals was demonstrated at the conference for the first time by its designer, Dr. Charles F. Reid (COR '56), Department of Veterinary Surgery, Cornell.

Although the boot is designed primarily for use on the limbs of large animals, Dr. Reid included in his discussion facts concerned with radiation therapy in the treatment of small animals.

He said that at Cornell, radioactive materials are stored in a 350-lb. portable lead storage container. Special tongs are used to transfer the source of radiation into the containers inside the boot, where they are enclosed in sealed stainless steel tubes.

FLY CONTROL PROBLEM ON DAIRY AND LIVESTOCK FARMS

"Fly control is now a most difficult problem on New York State dairy and livestock farms due to physiologic changes in the old established type of fly and the introduction of a new type," said John G. Matthysse, professor of economic entomology at Cornell.

"Our worst summertime livestock pest is now the face fly," he said. "This pest, only recently introduced from Europe, has spread throughout the northeastern and north central United States."

Control of this type of fly is difficult since the flies do not come into the barns but breed only in manure on pasture, he said. "Experiments in 1960 provided 2 stop-gap controls: a face wipe-on treatment with fly repellent and a killing bait of syrup and DDVP," Professor Matthysse said. "Another avenue of attack, feeding insecticides to cattle to prevent breeding in the manure, shows considerable promise but is not ready for practical use.

"Evolution has enabled the housefly to become resistant to every new insecticide used to kill it," he said. "Fifteen years ago the fly problem was thought solved by DDT but within five years flies could not be killed by this method. Lindane and organophosphorous compounds followed the same pattern."

## Wisconsin

WISCONSIN V.M.A. MEETS IN ANNUAL SESSION.—The incidence of hog cholera was higher last year than any on record in Wisconsin, said Dr. Arden Erdmann (OSU '43), Wisconsin state veterinarian. Dr. Erdmann was giving his annual report on livestock health at the annual meeting of the Wisconsin V.M.A., Jan. 15-17, 1961, in Milwaukee.

He said that cases of hog cholera were scattered throughout the state, without pattern. The spread seems to be due to movement of unvaccinated swine.

Cholera vaccination has hit an all-time low, covering fewer than 5% of the hogs, so "we have a highly susceptible population," Dr. Erdmann said. Cost has been a factor, plus the fact that owners have been willing to take a chance "because of many years without a problem."

Dr. Erdmann said that Wisconsin is now moving toward a certified brucellosis-free status. The state now is on a modified-certified status.

#### Fast Transportation Brings Problems

Also speaking at the meeting, Dr. Robert L. Knudson (OSU '34), Agricultural Research Service, USDA, Washington, D.C., said that air shipment, particularly on jet planes, has heightened the problems of disease spreading. He said that 85% of the international livestock movement is by air. A boat trip took a long time, during which diseases could be diagnosed. A sick animal might die before it got to this country. Now planes whisk the livestock into the United States even before fumigants have a chance to work, he said.

#### Honors Conferred

Three top honors were conferred by the Wisconsin V.M.A. at the meeting.

**Dr. Luther Albert, Wisconsin Veterinarian of the Year**

Dr. Luther Albert (AUB '54), director of the animal care unit of the University of Wisconsin medical center, Madison, was named Wisconsin veterinarian of the year. Dr. Albert is in charge of 8,000 to 9,000 animals of 15 to 20 species. He heads a staff of 10. He also has charge of 400 monkeys in the primate laboratory. Through his efforts, a 10-week course in animal care was given by the extension service.

Also announced was a meritorious service award to Dr. Fred W. Milki (IND '22), Milwaukee, the second such citation by the association. He has been a director of the Wisconsin Humane Society for 15 years.

Dr. Wayne H. Thompson (ISU '43), instructor in the University of Wisconsin Department of Veterinary Science and leader in the mastitis control herd demonstration project since fall, 1958, was given the $100 Burr A. Beach award. The award is named for the association's counselor and former secretary, Dr. Burr A. Beach (OSU '09).

**Officers Elected**

Officers of the Wisconsin V.M.A. are: Drs. E. A. Woelffer (COR '31), Oconomowoc, president; Sam Elmer (OSU '34), Richland Center, vice-president; W. J. O'Rourke (MSU '44), Madison, secretary; and Edward Pope (ISU '49), Madison, treasurer.

## Wyoming

STATE VETERINARIAN RETIRES.—On January 1, Dr. G. H. Good (KCV '16) turned over his duties as Wyoming state veterinarian to Dr. E. D. Barrows (COL '39).

Dr. Good has been state veterinarian since 1944. He has also been president of

**Dr. G. H. Good**

the Wyoming and Intermountain V.M.A.'s, the U.S. Livestock Sanitary Association, and the Wyoming Board of Health. He recently had been voted an honorary lifetime member of the Wyoming Stockgrowers Association.

After graduation from veterinary school, Dr. Good served as a lieutenant in the Veterinary Corps until 1918 when he entered private practice at Wheatland. In 1923 he became deputy and assistant state veterinarian. Dr. Good will continue to work with the Livestock and Sanitary Board as assistant state veterinarian at his home in Wheatland.

The new state veterinarian, Dr. E. D. Barrows, had been employed by the Wyoming Hereford Ranch for a number of years before recently becoming affiliated with the Livestock and Sanitary Board.

## *State Board Examinations*

IOWA—June 1-2. 1961, Division of Animal Industry, State House, Des Moines 19, Iowa. Dr. A. L. Sundberg, chief Division of Animal Industry, State House, Des Moines 19, Iowa.

NEW HAMPSHIRE—July 5, 1961, State House, Concord, N.H., 9 a.m., Dr. Eric W. Simmons, secretary-treasurer, Exeter Road, North Hampton, N.H.

NORTH CAROLINA—June 21-23, 1961, Morehead-Biltmore Hotel, Morehead City, N.C. Dr. James I. Cornwell, secretary, P.O. Box 9038, Asheville, N.C.

## *Deaths*

Star indicates member of AVMA

**F. G. Carter** (ONT '39), 44, formerly of Guelph, Ont., more recently of London, Ont., died Nov. 20, 1960.

Dr. Carter was a veterinary inspector with the Canada Department of Agriculture's pesticide laboratory.

**Charles L. Coleman** (TEX '36), 55, Reno, Nev., a general practitioner, died Dec. 28, 1960.

★**Herbert C. Cram** (CIN '13), 71, Phoenix, Ariz., died Jan. 9, 1961.

**V. O. Davis** (CIN '10), 80, a retired veterinarian of Cincinnati, Ohio, died Dec. 7, 1960.

**Leslie A. Evans** (ONT '03), 82, a retired veterinarian of Essex Junction, Vt., died Dec. 25, 1960.

Dr. Evans had been active in the Vermont State Legislature, having held seats in both the State's Senate and House of Representatives. He was also a member of the state Board of Education and a past-president of the Vermont V.M.A.

**John W. Freeman**, Burrton, Kan., a retired veterinarian, died of a heart attack Nov. 25, 1960.

★**Richard W. Harter** (COR '53), 33, Auburn, N.Y., a general practitioner, was found dead after being clubbed Jan. 24, 1961.

**Paul B. Haskell** (WSU '43), 53, Portland, Ore., died Dec. 12, 1960.

Dr. Haskell, a 17-year resident of Portland, had just recently opened the Haskell Animal Clinic there. He was a member of the Oregon and Portland V.M.A.'s.

★**E. H. Haynie** (STJ '18), 66, a Kansas City, Mo., practitioner, died Dec. 14, 1960.

Dr. Haynie was a member of the AVMA and the Missouri and Greater Kansas City V.M.A.'s. He was also a member of the Kansas City Small Animal Association.

**H. W. Householder** (ISU '11), 71, Portland, Ore., died Jan. 14, 1961.

Dr. Householder was with the meat inspection division of the USDA until his retirement in 1959.

**Joseph Johnson** (UP '06), 85, inspector for 44 years at the Union Stock Yards, Lancaster, Pa., died Dec. 14, 1960.

When Dr. Johnson retired in 1953, he was the oldest man in service with the Pennsylvania State Department of Agriculture.

★**Gary J. Kempers** (ISU '55), 29, died Nov. 8, 1960.

Dr. Kempers was a general practitioner in Sioux Center, Iowa.

★**Gustav H. Kimnach** (CVC '14), 78, a Highstown, N.J., general practitioner, died after a heart attack Jan. 25, 1961.

Dr. Kimnach was a past-president of the New Jersey V.M.A.

**Wilbert M. Kyle** (CVC) '15), 67, Lebanon, Ill., died Dec. 1, 1960.

Dr. Kyle began practicing in Lebanon in 1919. He retired 3 years ago because of ill health.

★**E. N. Moline** (KVC '11), 81, Tallahassee, Fla., a federal meat inspector, died Dec. 25, 1960.

**Charles E. Morris** (COR '11), 73, Auburn, N.Y., died Jan. 9, 1961.

Dr. Morris retired in December, 1956, after 40 years as the USDA's assistant to the state veterinarian, in charge of research on animal diseases.

**William J. Orr,** 88, Creston, Ohio, a retired veterinarian, died Dec. 27, 1960.

**Robert B. Rice** (OSU '15), 68, of Kenton, Ohio, died Nov. 28, 1960, of a heart attack.

The following obituaries, for various reasons, did not appear in previous issues of the JOURNAL. We report them now as a matter of record.

★**Wayne A. Anderson** (COL '36), 48, Denver, Colo., died May 15, 1960. Dr. Anderson had engaged in government service since his graduation from veterinary college.

**Reinhold Arbeiter** (MCK '13), 84, Hot Springs, Ark., a retired veterinarian, died Feb. 16, 1960.

**Harry W. Bolser** (IND '14), 77, a Pinellas County, Fla., meat inspector, died March 27, 1960. He had lived in Florida for 21 years, having moved there from New Castle, Ind.

★**Rex Emery** (COL '44), 38, Gering, Neb., died April 16, 1960. Dr. Emery, who was killed in an automobile accident, was president of the Nebraska V.M.A. at that time.

★**Robert R. Fast** (WSU '42), 42, died April 15, 1960. He had practiced in Hermiston, Ore., for 15 years.

**F. A. Hoell** (KCV '12), 75, DeSoto Parish, La., died March 20, 1960. Dr. Hoell was a general practitioner.

**H. J. Jewell** (KSU '35), 49, Sulphur, Okla., died March 8, 1958, after a heart attack.

**George R. Kennedy** (STJ '18), 69, a general practitioner of Lyons, Kan., died April 6, 1960.

★**M. E. Miller** (COR '34), 50, Danby, N.Y., died after undergoing surgery for a brain tumor April 18, 1960. Dr. Miller had been head of the veterinary anatomy department at Cornell University.

★**Norman J. Miller** (CVC '08), 64, was killed in an automobile accident April 26, 1960.

Dr. Miller was a general practitioner. He was also active in the Colorado state legislature, having served in the House of Representatives from 1943 to 1948 and in the Senate from 1951 to 1958. Dr. Miller's wife, Helen, was also killed in the accident.

**A. B. Moore** (AUB '12), 69, Marion, Ala., a retired veterinarian died March 22, 1960.

★**William S. O'Brien** (CVC '12), 77, died May 14, 1960, after a heart attack. Dr. O'Brien had practiced in Ryan, Iowa, for 48 years.

**David E. Settle** (SF '07), 78, Stockton, Calif., a retired employee of the former Bureau of Animal Industry, died April 2, 1960, following a heart attack.

**Lawrence H. Simmons,** 62, Stockton, Mo., died Jan. 21, 1960. Dr. Simmons was a general practitioner.

**Bernard Tiernan** (MCK '18), 81, a retired meat inspector, died April 8, 1960.

★**Dr. G. V. Zatlokal** (ONT '55), 46, Winnipeg, Manitoba, died in a traffic accident Oct. 16, 1959.

# Women's Auxiliary

## California

WOMEN'S AUXILIARY PRESENTS GRANT.—The Women's Auxiliary to the California V.M.A. awarded the annual scholarship grant to Joseph Garcia, a student in the

**Presenting the Women's Auxiliary to the California V.M.A. scholarship grant to Joseph Garcia are: (left to right) Mrs. Louis F. Johnson, president-elect; Mrs. Ronald T. Hauge, second vice-president; and Mrs. Russell P. Cope, president.**

School of Veterinary Medicine, University of California. The award was presented at the auxiliary's annual luncheon during the mid-winter conference of the California V.M.A. Jan. 30 to Feb. 1, 1961.

## Iowa

EASTERN IOWA V.M.A. WOMEN'S AUXILIARY MEETS.—Officers elected at the annual meeting of the Women's Auxiliary to the Eastern Iowa V.M.A. last October were: Mrs. K. H. Randolph, Lost Nation, president; Mrs. Floyd Beaver, Grinnell, president-elect; Mrs. Richard Elliott, Lone Tree, vice-president; Mrs. Robert Van Dyke, Pella, secretary; and Mrs. James Thornton, Walcott, treasurer.

**Officers of the Women's Auxiliary to the Eastern Iowa V.M.A. are: (standing left to right) Mrs. J. W. Thornton, treasurer; Mrs. Robert VanDyke, secretary; and Mrs. Richard Elliott, vice-president. (Seated) Mrs. Leroy H. Bell, retiring president; Mrs. R. H. Randolph, president; and Mrs. Floyd Beaver, president-elect.**

Special guests at the meeting were Mrs. E. E. Leasure, Manhattan, Kan., president of the Women's Auxiliary to the AVMA; Mrs. Stanley Hendricks, Des Moines, membership secretary of the Women's Auxiliary to the AVMA; and Mrs. C. D. Lee, Ames, president of the Women's Auxiliary to the Iowa V.M.A.

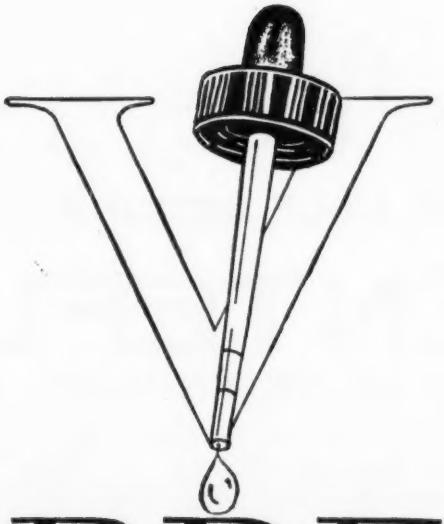
Honored at the meeting for over 40 years' membership in the Eastern Iowa auxiliary were: Mrs. Laird Woods, Malcome; Mrs. Iva Dunn, Atlins; Mrs. John Bryant, Mt. Vernon; and Mrs. William O'Brien, Ryan.

## South Carolina

WOMEN'S AUXILIARY MEETS.—Members of the Women's Auxiliary to the South Carolina V.M.A. voted at their meeting Jan. 21, 1961, in Columbia, S.C., to donate $25 to the AVMA Student Loan Fund and $10 to the AVMA Research Fund.

Fund-raising plans for the AVMA Research Fund-Raising Campaign were reviewed at the meeting. The women were asked to collect a minimum of $7.50 from every veterinarian in the state before Feb. 15, 1961. Fund raisers' solicitation kits to be used during the campaign were distributed.

Officers elected at the meeting are: Mrs. M. R. Blackstock, Spartanburg, president; Mrs. S. Rice McMaster, Rock Hill, vice-president; Mrs. T. M. Rhodes, North Charleston, secretary; and Mrs. L. C. Merritt, Sumter, treasurer.



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# WHAT IS YOUR Diagnosis?

***Make your diagnosis from the picture below—then turn the page ▸***

**Fig. 1—Radiograph, medial view, of the left elbow joint of the dog.**

*History.*—A male Basset Hound, 1½ years old, was periodically lame in the left front leg. Radiographs of both front legs were taken and a radiograph, medial view, of the left foreleg is shown (fig. 1).

## Here Is the Diagnosis

*(Continued from preceding page)*

*Diagnosis.*—Extra osseous body (fig. 2, arrow) in the area of the left elbow joint. The right elbow was not affected.

*Comment.*—Front leg lameness in 3 German Shepherd Dogs, caused by extra osseous bodies in the region of the elbow joint were reported in 1956. The diagnoses were ectopic sesamoid bones in the elbow.[3] Eleven other cases were documented in which the authors called the defects ununited anconal processes of the ulna.[2] In a third report, elbow dysplasia involving ununited anconal processes was reported in 11 other German Shepherd Dogs; osteoarthritis of the joint occurred in those instances where the "extra" bone segments were not removed.[1]

**Fig. 2—Radiograph, medial view, of the left elbow joint of the dog, showing extra body (arrow).**

The 25 cases reported previously involved German Shepherd Dogs. The case described above involves a Basset Hound, but in addition, we have seen 3 German Shepherd Dogs with this condition. The incidence of this malformation is probably more frequent than has been realized; undoubtedly, it will be found in most of the other breeds when elbow lamenesses are investigated more often.

In order to clarify the genesis of the formation of these bodies, the growth pattern of the area will have to be studied in greater detail, both histologically and radiologically.

---

This report was submitted by members of the staff of the Riser Animal Hospital, Skokie, Ill., and prepared with the assistance of Dr. Wayne H. Riser, D.V.M., M.S., Kensington, Md.

**References**

[1]Carlson, William D.: Elbow Dysplasia in the Dog. J.A.V.M.A., 138, (March 15, 1961): 295.

[2]Cawley, A. J., and Archibald, J.: Ununited Anconal Processes of the Dog. J.A.V.M.A., 134, (May 15, 1959): 454-458.

[3]Stiern, Richard A.: Ectopic Sesamoid Bones in the Elbow (Patella Cubiti) of the Dog. J.A.V.M.A., 128, (May 15, 1956): 498-501.

### Vizsla Recognized as 115th AKC Breed

The Vizsla *(pron. VISH-la)*, a Hungarian pointer, has been admitted to registry in the American Kennel Club stud book as the 115th breed.

Bred for hunting rabbits and partridge on the Hungarian plains, the rust-colored Vizsla combines certain qualities of a pointer and retriever. He averages 23 inches at the shoulder and weighs from 50 to 60 lb. His head is lean, with strong, squared jaws. Robust yet graceful, the Vizsla has attracted widespread interest and admiration as an all-purpose game hunter since his introduction to the United States and Canada about 10 years ago.

About 500 applications have been submitted for foundation stock. After the stud book is closed, no Vizsla will be eligible for registration unless the litter of which he was a part has been registered.—*All Pets, Jan., 1961.*

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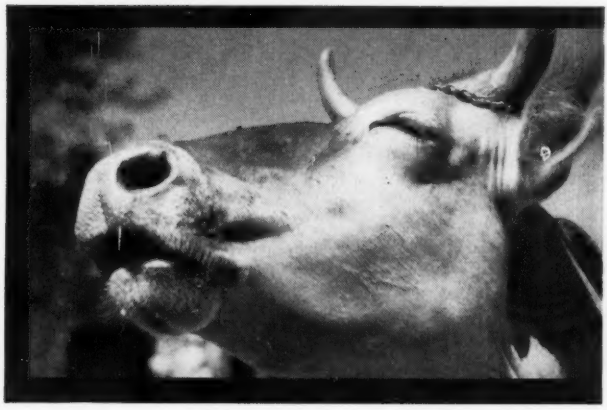

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1. Jones, S. V.; Belloff, G. B., and Roberts, H. D. B.: Vet. Med. 51:413 (Sept.) 1956.

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1) *Exclusive Publication*: Articles submitted for publication in the JOURNAL of the AVMA are accepted with the understanding that they are not being offered for publication elsewhere.

2) *Manuscripts*, including footnotes, references, tables, and legends, must be typewritten, double-spaced, on 8½- by 11-inch bond paper, and the original and one carbon copy should be submitted. One-inch margins should be allowed on the sides with 2-inch margins at the top and bottom. Articles should be concise.

Purpose of the article should be stated in the introduction. Summary should be included.

3) *References* to published works should be brief and limited strictly to what is relevant to satisfactory exposition of the author's own work. Reference names are not permitted in the text of the article. Persons cited are to be referred to by superscript numbers only, relating to the reference list at the end of the article.

References should be typed double-space, in alphabetical order by author, as follows: author(s), title, periodical name, volume, year, and page(s).

[5]Mansson, J., and Obel, N.: The Technique of Adrenalectomy in the Ruminant. Cornell Vet., 48, (1958): 197-201.

When books are cited, name of publisher, location, edition, year of publication, and pages concerned should be given.

[1]Arey, L. B.: Developmental Anatomy. 5th ed. W. B. Saunders Co., Philadelphia, Pa. (1946): 236-240.

4) *Tradenames* of products are avoided in the text of the article. Use only generic or chemical names. The tradename may be included in a footnote along with name and location of producer (composition of product may be included if necessary): e.g., ". . . piperazine citrate* . . ."

Footnote: *Piperol, Carson Chemicals, New Castle, Ind.

5) *Arabic numerals* should be used wherever digits are needed throughout the article except at the beginning of a sentence.

6) *Abbreviations* for weights and measures as given in standard dictionaries are usually acceptable, but some are determined by AVMA editorial preferences: e.g., Gm., gr., kg., cc., mg., cmm., Gm./kg., μg., mg./100 ml. Other abbreviations should be explained the first time they are mentioned either in parentheses or footnotes: e.g., ". . . pregnant mare's serum gonadotrophin (PMSG). . ."

7) *Photographs* should be furnished in glossy prints. Identifying arrows, letters, etc. within photographs should be clearly defined. All illustrations should bear the author's name, illustration number, and "top" side indication.

8) *Drawings*, graphs, and charts should be clear and large enough to allow for possible reduction in size. A glossy print should be submitted if possible.

9) *Tables* should be simple and typed double-space. Complex tables are not acceptable. Complex material should be summarized rather than tabulated.

10) *Legends* should be typed double-space on a separate sheet.

Sufficient information should be included to allow the illustration to be understood without reference to the text.

Before submitting a manuscript, authors are urged to consult previous JOURNALS for appropriate style. The AVMA reserves the right to reject any manuscript.

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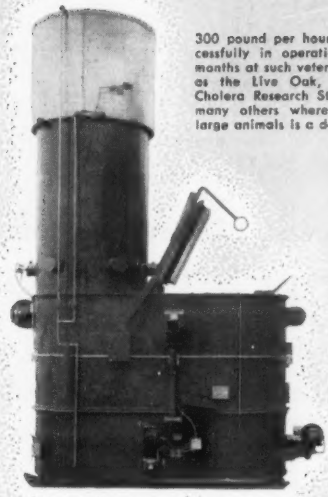

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It can properly be said that every activity of an association is a "membership service." All of the complex actions of councils, committees, counsels, and conferees should be designed to contribute to the member and the profession. Serving its membership is the Association's *raison d'etre*.

To the member, most of whose time is spent in the pursuit of excellence in his career, the AVMA is usually judged by its tangible products and by its day-to-day services. Such services are of two types: those which are "free" and are financed by the regular membership fees; and those which are optional. Because of the topical interest being expressed in one of the optional services, this article on membership services will deal with it. Subsequent articles will describe other services available to AVMA members.

Much is being written in professional circles about professional liability or malpractice difficulties. The number of legal suits against medical professionals continues to rise. This is true, in part, because of the wide differences of opinion among the many courts as to what constitutes professional liability, and in part because of increasing public awareness of the leniency of some courts in awarding olaims. Members of the health professions are alarmed by this situation. Many are seeking protection by subscribing to one of a number of insurance plans which underwrite the doctor's practice risk.

A survey conducted by the American Dental Association in 1956 indicated that 94.1% of responding dentists were covered by some sort of malpractice insurance. A similar 1957 survey of physicians revealed 92.3% coverage of A.M.A. members.

The AVMA began to offer malpractice insurance in 1925. Though it was difficult at first to find a responsible underwriter due to lack of actuarial data, a plan was originated to provide coverage on a low cost basis for members in most states. Today it is available throughout the United States for members through the AVMA's agents, Goerlich and Goerlich. It is underwritten by United States Fidelity and Guarantee Company.

Generally, the advantages to be derived from professional liability insurance are:

1. The insurance company will provide legal defense of the insured practitioner without cost to him.
2. The company will carry the case to courts of last appeal, if insured desires.
3. The company will give bond up to the amount of the policy.
4. The company offers the protection to the insured if he is sued for acts of unlicensed assistants.
5. The company will pay for damages awarded if the case is lost, up to the amount of policy limit.
6. The company will pay any compromise settlement up to the policy limit.

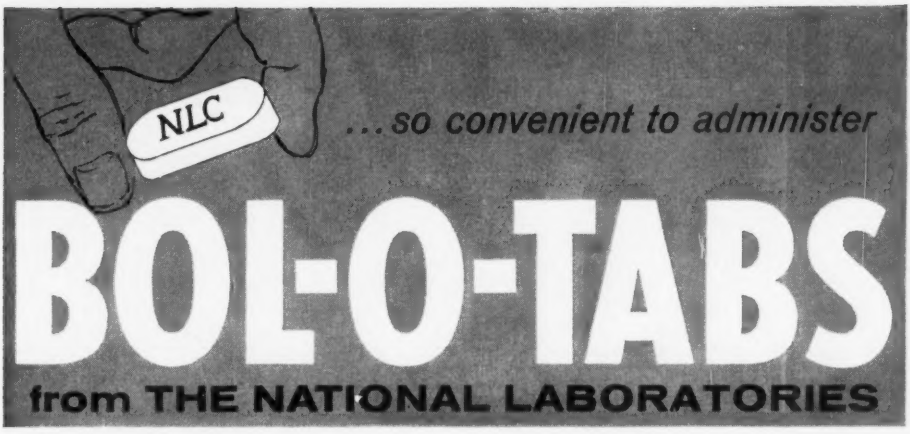
This coverage protects the practitioner from many risks and annoyances. Malpractice suits are frequently expensive; they are always time-consuming and troublesome.

The cost of coverage under the minimum limits of the AVMA plan is $25.00 per year for each individual. In addition, $6.50 each is charged to protect the insured against acts of licensed assistants. Partners who wish insurance for each other's acts are charged a total of $30.00 each per year. There is no charge for unlicensed assistants, helpers, or kennel men. Minimum coverage is $5,000 allowable for any one claim and $15,000 allowable for all claims in any one year. Higher limits are available for additional premiums, if approved by the company.

During the period from 1955 through 1958, more than $50,000 in claims was paid by the AVMA underwriter. In 1959, 125 claims were filed against the approximately 2,100 participants in the AVMA insurance program. The majority of allegations involved improper treatment (malpractice), although second in frequency was animal escape (negligence). Small animals were the patients in the majority of claims. Other claims involved birds, cattle, horses, swine, and poultry.

AVMA members who would like further information should address their inquiries to: Membership Services, AVMA, 600 South Michigan Ave., Chicago 5, Ill.

R. D. Morrison
Administrative Assistant

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Indicated in the treatment of Coccidiosis in cattle and sheep. Also as an astringent in dysentery in cattle and sheep.

*Each* **Bol-O-Tab** *Contains:*

| | |
|---|---|
| Sodium Arsanilate (Elemental Arsenic 2.35 gr.) | 7½ gr. |
| Sodium Sulfacetamide | 20 gr. |
| Sodium Sulfabenzamide | 20 gr. |
| Sulfaquinoxaline | 25 gr. |
| Ferrous Gluconate | 10 gr. |
| Copper Sulfate | 40 gr. |
| Tannic Acid | 20 gr. |
| Charcoal, Wood | 30 gr. |
| Calcium Carbonate | 30 gr. |
| Cobalt Gluconate | 1 gr. |

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A Proteolytic Enzyme compounded in a special base. Indicated in treating conditions of retained placenta and as an application for dissolution of Necrotic Tissues. Packed 20 Bol-O-Tabs in a jar.

*Each* **Bol-O-Tab** *Contains:*

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| Trypsin 1:80 | 64 gr. |
| Urea | 84 gr. |
| Sodium Perborate | 48 gr. |

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## B S P with KREMONATE **BOL-O-TAB JR.**

A balanced formula highly effective against: (1) calf scours; (2) many intestinal disorders in calves and colts; (3) diarrhea in young animals due to dietary disturbances. Packed six in a dispensing plastic container—12 containers in a handy, self-locking carton.

*Each* **Bol-O-Tab** *Contains:*

| | |
|---|---|
| Sulfathiazole N.F. | 50 gr. |
| Bismuth Subsalicylate U.S.P. | 7½ gr. |
| Phenyl Salicylate N.F. | 3 gr. |
| Zinc Sulfocarbolates N.F. | 1½ gr. |
| Thiamine Mononitrate U.S.P. | 45 mg. |
| Pepsin 1:3000 | 6 gr. |
| Krameria | 10 gr. |
| Rubus (Blackberry Root) | 8 gr. |
| Ginger (as Spicolate) | 7 gr. |
| Potassium Guaiacol Sulfonate N.F. | 4½ gr. |

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Clearly, the easiest and cheapest method of keeping pig losses low is by proper sow nutrition, even before breeding. RIBAD II and CON-O-Mineral fortify pre-breeding rations by furnishing ample Vitamin A plus a balance of other essential nutrients. Then, during the gestation and lactation periods, when Vitamin A requirements go up five-and-ten-fold, CON-O-Mineral and RIBAD II help keep sows in the best condition to develop strong, disease-resistant pigs. This means more pigs weaned . . . and at better weights.

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## Ninety-Eighth Annual AVMA Meeting

**Detroit, Michigan—August 20-24, 1961**

### *M.S.U. Invites Conventioneers*

Whether you are a student, scholar, practitioner, or just a nature lover or hiking fan, plan a visit to Michigan State University while you attend the AVMA's 98th annual session.

The campus of the nation's first agricultural college, and model for the land-grant system, spreads over 900 acres at East Lansing and is among the most attractive in the nation. It contains more than 98 permanent buildings and a collection of some 2,800 different species of trees, vines, and shrubs. Its collection of woody plants is one of the most extensive in northern United States. Everything possible has been done to retain and enhance the natural beauty of the campus as new buildings have been constructed. On the campus are gardens and other scenic spots as well as the museum, radio and television studios, and similar points of interest which you are invited to visit.

With an enrollment of more than 20,000 students, M.S.U. ranks consistently among the 10 largest institutions of higher education in America. The university offers 130 courses of study in 9 colleges—Agriculture, Business and Public Service, Communications Arts, Education, Engineering, Home Economics, Science and Arts, Veterinary Medicine, Basic College, and the School for Advanced Graduate Studies. M.S.U. has the nation's largest on-campus student housing program, providing quarters for approximately 12,000 students and student families.

#### M.S.U.'s College of Veterinary Medicine

Though not established as a college until 1910, veterinary medicine at Michigan State dates from the 1880's when people with training in the subject were added to the staff. The College offers two curriculums to undergraduate students: the veterinary curriculum leading to the degree of doctor of veterinary medicine, and the medical technology curriculum leading to the degee of bachelor of science. The College maintains a complete veterinary hospital, with medical, surgical, and x-ray facilities for both large and small animal, and a 125-acre research farm where the diseases of all classes of livestock and poultry are studied. The College also operates a farm veterinary service, staffed by specialists who make farm visits. Departments include anatomy, veterinary pathology, microbiology and public health, physiology and pharmacology, and surgery and medicine. Dean W. W. Armistead extends a special invitation to all annual session participants and their guests to visit the college's facilities.

#### Transportation to East Lansing

Eastern Greyhound Lines provides regular and convenient bus service between downtown Detroit and East Lansing. The Bus Terminal at East Lansing is located about 2

*Continued on adv. p. 35.*

*for the prevention of swine erysipelas . . .*

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*in a new 2-cc. dose easy to administer . . . with less inoculation reaction*

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*M.S.U.—continued from adv. p. 33.*

blocks from M.S.U.'s Kellogg Center, the nation's largest laboratory for hotel and restaurant students. Taxi service from Kellogg Center to the university campus is available. The regular round trip fare from Detroit to East Lansing is $5.40 plus 10 % federal transportation tax. The trip takes about 2½ hours, one way.

• • •

## The Convention City

Located on the western bank of Lake Erie, within easy reach of the great mass of members of the association, [Detroit] is an ideal point for a national gathering. It is not so central as some cities situated to the south but it will meet with the approval of the majority of the members. The membership is greatest in the East and throughout the central West, extending as far toward the Pacific slope as Arizona and Washington. . . . Not only is the selection of Detroit a happy decision geographically, but it is a just reward for patient waiting, since year after year her veterinarians have placed her name in nomination and urged her many claims. There are no more earnest men anywhere than those of that city; they need the influence and the prestige of so auspicious an event as the assembling within her hospitable walls of the National Association. . . .—*Editorial in the Jan. 1900, issue of Am. Vet. Rev., p. 683.*

### Swedish Dogs Insured

Approximately 50,000, or 15%, of all purebred dogs in Sweden are insured against accidents and sickness. The reason for this increase in canine insurance is attributed to the growing risk of traffic accidents.—*All Pets (July, 1960): 89.*

**PREGNANCY DETERMINATION**

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Contains oleandomycin and neomycin for added depth of treatment and for activity against organisms that may be resistant to penicillin or streptomycin

Reduces inflammation with prednisolone, which is three times as effective as hydrocortisone

Contains no penicillin

Almost all of the common types of the bacterial pathogens causing bovine mastitis can be treated effectively with new Mastalone.

Its unique combination of antimicrobial and anti-inflammatory agents supplies *true* broad-spectrum treatment in depth . . . in a formulation available only to veterinarians. It promotes increased effectiveness in treating most types of mastitis commonly encountered by the veterinarian today.

**True broad spectrum**

It offers the unusually wide-range activity of effective, time-proven oxytetracycline hydrochloride.

**Added depth of spectrum**

Mastalone contains neomycin . . . an antibiotic that exhibits the same general coverage of organisms as streptomycin . . . yet with wider spectrum. And neomycin also demonstrates effectiveness against streptomycin-resistant organisms. It is particularly effective against Proteus and Pseudomonas.

**Combats penicillin-resistant organisms**

New Mastalone contains no penicillin. Instead, it is formulated with oleandomycin—one of the newest antibiotic agents—developed specifically to help combat strains of staphylococci and streptococci which may be resistant to other narrow-spectrum antibiotics.

**Potent anti-inflammatory activity**

Prednisolone is provided to reduce tissue inflammation. This corticosteroid is three to five times more potent than hydrocortisone and shows significantly fewer side effects.

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Supplied in 10-cc. tubes, Mastalone contains:

- 200 mg. of oxytetracycline (as hydrochloride).
- 100 mg. of oleandomycin base.
- 100 mg. of neomycin (as sulfate).
- 5 mg. of prednisolone (Sterane®).
- Special base, Q. S.

Warning: Milk taken from dairy animals within 72 hours after treatment for mastitis should not be used for food.

**Sold only to veterinarians.**

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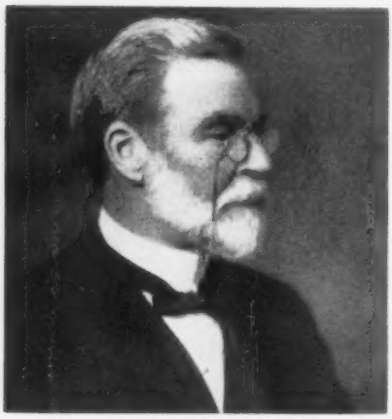
## History of the AVMA

### 1906

In his presidential address at the annual meeting in New Haven, Conn., W. H. Lowe expressed regret over the resignation of D. E. Salmon as Chief of the BAI, but delight that A. D. Melvin had been appointed in his place. Earlier, the membership of the AVMA had nominated Leonard Pearson as its first choice after Secretary of Agriculture Wilson asked for "an expression from this association as to the qualifications of the man to be appointed." A resolution was adopted commending the BAI upon its being found blameless in the alleged meat inspection "scandal" which had forced the resignation of Dr. Salmon.



James Law

Contrary to those apostles of doom who, having viewed the bicycle as the agent of extinction of the veterinarian a decade or so earlier, and now eyed the automobile with the same misgivings, Dr. Lowe avers: "The future of the veterinary profession does not depend upon 'the coming of the automobile' or 'the passing of the horse,' but it does depend, and always will depend, upon the ability, adaptability, character and purpose of the young man who knocks at the college door for matriculation."

Among his recommendations was one that a category of "Fellow of the AVMA" be created to honor those "who have rendered some conspicuous service for the benefit and advancement of veterinary science and art, and who have been recommended for such conspicuous service by a majority of the living past presidents of the AVMA."

Following the adoption of a motion the previous year by C. J. Marshall, a nominating committee consisting of the past presidents Bell, Butler, Hoskins, Robertson, Stewart, and Winchester presented a slate of candidates, with three names for president and two for each of the other offices. In many of the preceding years there had been "no contest" for most of the offices. James Law was elected president; R. P. Lyman, secretary; and George R. White, treasurer.

At "the ideal clinic which we have all been hoping for," 25 horses and 1 dog were operated on, with W. L. Williams, L. A. Merillat and G. R. White dominating the field. The proceedings were interrupted by a humane society officer who claimed "he had been informed that unnecessary operations were being performed, or that animals were being caused to suffer pain simply to demonstrate surgical methods . . . but when shown what was being done he changed his mind, and remained to witness many of the procedures."

✦ ✦ ✦

JAMES LAW, F.R.C.V.S., was born in Scotland, Feb. 13, 1838, and entered the Edinburgh Veterinary College at 16. He was graduated in 1857 and became Demonstrator of Anatomy at his alma mater. He co-authored a text on anatomy with his preceptor, John Gamgee. Later he was Professor of Anatomy at Gamgee's ill-fated college in London. In 1868 he was picked by Andrew White, president of Cornell University, to be Professor of Veterinary Science in the newly-established institution, where he served for 40 years, until his retirement in 1908.

His accomplishments include his monumental five-volume work on *Veterinary Medicine*, published about the turn of the century, and countless articles in the veterinary and agricultural publications. As a leading authority on epizootic disease, he was a member of the Treasury Cattle Commission and was a special investigator for the BAI. He was a leading proponent of higher standards for veterinary education.

It was in recognition of his manifold contributions to veterinary medicine, rather than as a long-time Association worker, that he was accorded the presidency of the AVMA in 1906. His death on May 10, 1921, terminated one of the longest and most distinguished careers of service to veterinary medicine in America.

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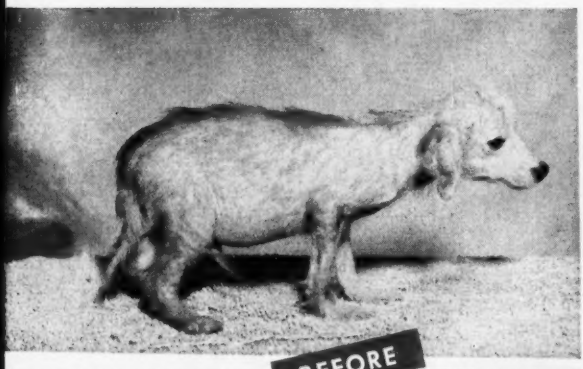
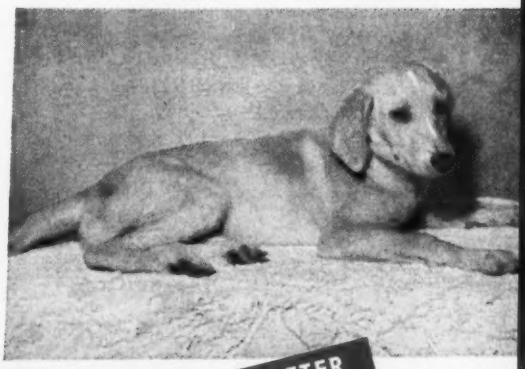
**for fungal, bacterial, and allergic**

**dermatoses of dogs and cats**





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And safe! THERA-TERGENT may be used without special protection of eyes or genitalia of the animal — is completely safe for use on cats. It is nonstaining, leaves the animal pleasantly scented. It will not irritate skin, eyes, nose, or respiratory tract of the user. Contains 6% Triethanolamine Thiocyanate Warren-Teed.

1. "Clinical Evaluation of a Drug for Dermatoses of Dogs and Cats," Wenger, J. B., Vet. Med., 55:55-58, Mar. 1960.

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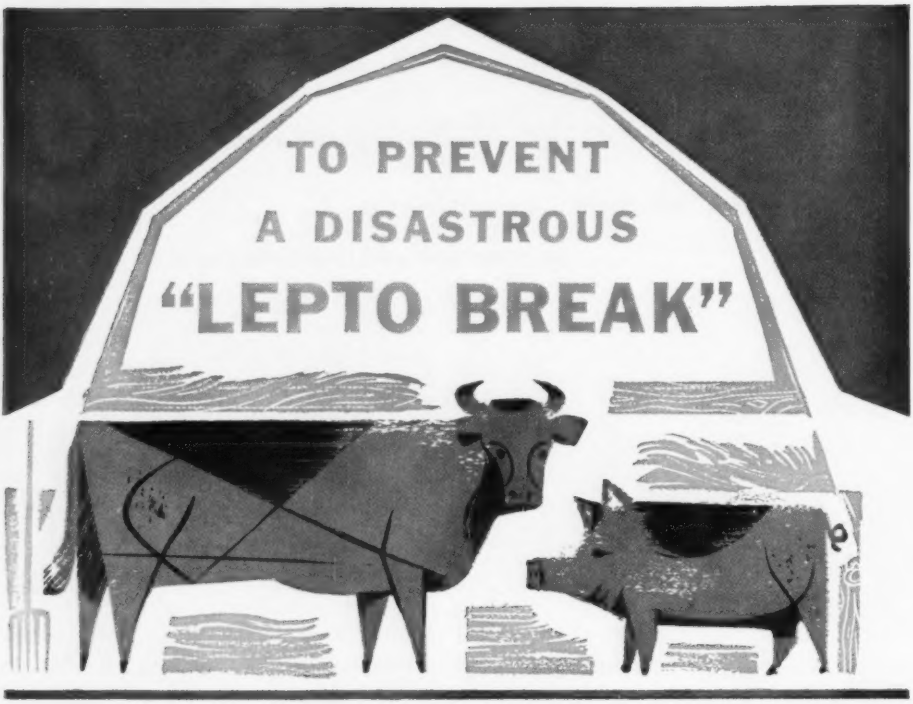


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# Coming Meetings

**Notices of coming meetings must be received 30 days before date of publication.**

### March, 1961

**Alabama Veterinary Medical Association.** Annual meeting. Whitley Hotel, Montgomery, Ala., March 19-21, 1961. Dr. M. K. Heath, School of Veterinary Medicine, Auburn, Ala., secretary.

**New Jersey Veterinary Medical Association.** Hotel Claridge, Atlantic City, N. J., March 22-23, 1961. Dr. John R. McCoy, Bureau of Biological Research, Rutgers University, New Brunswick, N.J., secretary.

**Pennsylvania, University of.** Postgraduate short courses. School of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pa., March 27-30, 1961. Dean's Office, School of Veterinary Medicine, University of Pennsylvania, Philadelphia 4, Pa.

**Indiana Veterinary Medical Association.** Fourth symposium on therapeutic nutrition. State Board of Health Building, Indianapolis Ind., March 31, 1961. Dr. E. E. Slatter, 4131 Vera Dr., Indianapolis 20, Ind., chairman.

### April, 1961

**Washington State University.** Thirteenth annual conference for veterinarians. School of Veterinary Medicine, Washington State University, Pullman, Wash., April 3-5, 1961. Dr. Hugh C. Butler, conference chairman.

**Ohio Academy of Science. Annual meeting.** University of Cincinnati, Cincinnati, Ohio, April 20-22, 1961. Mr. Kenneth B. Hobbs, 505 King Ave., Columbus 1, Ohio, executive secretary.

**Animal Health Institute.** 21st annual meeting, Mayflower Hotel, Washington, D.C., April 24-26, 1961. Dr. Guy A. Railsback, Cutter Laboratories, 4th & Parker Sts., Berkeley 10, Calif., president.

**Southwestern Conference on Diseases in Nature Transmissible to Man.** Eleventh annual conference Agricultural and Mechanical College of Texas, Memorial Student Center, College Station, Texas, April 27-28, 1961. Dr. F. P. Jaggi, Jr., Department of Veterinary Public Health, Agricultural and Mechanical College of Texas, College Station, Texas, conference chairman.

### June, 1961

**Texas, Agricultural and Mechanical College.** Fourteenth annual conference for veterinarians. School of Veterinary Medicine, Agricultural and Mechanical College of Texas, College Station, Texas, June 1-2, 1961. Dr. R. D. Turk, Texas Conference for Veterinarians, School of Veterinary Medicine, College Station, Texas, conference chairman.

**Kansas State University.** Twenty-third annual conference for veterinarians. Little Theatre, Student Union Build-


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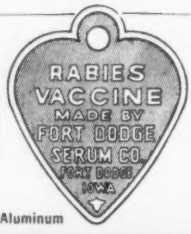

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ing, Kansas State University, Manhattan, Kan., June 11-13, 1961. Dr. John Noordsy, Dykstra Veterinary Hospital, Kansas State University, Manhattan, Kan., chairman.

**Kansas Veterinary Medical Association.** Semiannual business meeting. Student Union Building, Kansas State University, June 11-13, 1961. Dr. M. W. Osburn, 1525 Humboldt St., Manhattan, Kan., secretary-treasurer.

**South Carolina Veterinary Medical Association.** Summer program. Columbia Hotel, Columbia, S.C., June 15-17, 1961. Dr. L. D. Rodgers, Greenwood Veterinary Hospital, Box 348, Greenwood, S.C., program chairman.

**North Dakota State Veterinary Medical Association.** Fifty-sixth annual meeting. Ray Hotel, Dickinson, N.D., June 18-20, 1961. Dr. C. B. Bjornson, North Dakota State University, Fargo, N.D., secretary-treasurer.

**North Carolina Veterinary Medical Association.** Sixtieth annual meeting. Morehead-Biltmore Hotel, Morehead City, N.C., June 19-21, 1961. Dr. J. T. Dixon, 3026 S. Main St., Winston-Salem, N.C., secretary.

**Maritime Veterinary Associations.** Twelfth annual joint conference. Mount Allison University, Sackville, N.B., June 27-29, 1961. Dr. R. McG. Archibald, P. O. Box 310, Sackville, N.B., Can.

**Nebraska, University of. Swine Repopulation Conference.** Veterinary Science Department, University of Nebraska, Lincoln, Neb., June 28-29, 1961. Dr. Crosby Howe, Department of Veterinary Science, University of Nebraska, Agricultural Experiment Station, Lincoln 3, Neb., chairman.

### July, 1961

**Auburn University.** Fifty-fourth annual conference for veterinarians. Auburn University, School of Veterinary Medicine, Auburn, Ala., July 25-26, 1961. Dr. J. E. Greene, dean.

### August, 1961

**American Association of Veterinary Bacteriologists.** Annual meeting. Department of Microbiology and Public Health, College of Veterinary Medicine, Michigan State University, East Lansing, Mich., Aug. 18-19, 1961. C. H. Cunningham, Department of Microbiology and Public Health, College of Veterinary Medicine, Michigan State University, East Lansing, secretary.

**American Veterinary Medical Association.** Ninety-eighth annual meeting. Sheraton-Cadillac Hotel, Detroit, Mich., Aug. 20-24, 1961. Dr. H. E. Kingman, Jr., 600 S. Michigan Ave., Chicago 5, Ill., executive secretary.

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## Foreign Meetings

**Fourth International Congress on Animal Reproduction.** The Hague, Netherlands, June 5-9, 1961. For additional information contact: the Secretariat of the Fourth International Congress on Animal Reproduction, 14, Burgemeester de Monchyplein, The Hague, Netherlands, Dr. L. Hoedemaker, secretary to the organizing committee.

**Eighth International Congress of Animal Husbandry.** Hamburg, Germany, June 13, 1961.

**Twelfth World's Poultry Congress.** Show Grounds of the New South Wales Royal Agricultural Society, Sydney, Australia, Aug. 13-18, 1962. Dr. Cliff D. Carpenter, chairman, U.S. Participation Committee, 1207 Emerald Bay, Laguna Beach, Calif.; Dr. A. William Jasper, secretary, c/o AFBF, 2300 Merchandise Mart, Chicago 54, Ill.

### Horseless Age Postponed

New York horse dealers declare that not since 1892 has there been anything like the inquiry for horses that there is this spring, with good prices and the supply away below the demand. The riding academies are filled to overflowing, and there seems to be a general awakening to the fact that the horseless age has been postponed some 2,000 years.—*From the May, 1899, issue of Am. Vet. Rev., p. 81.*

*New, effective treatment for impaired fertility in cows*

**a simple 2-step method with**

# FURACIN®

BRAND OF NITROFURAZONE

*Solution Veterinary SQUEEJET® and Suppositories Veterinary*

- **reduces services per conception**
- **shortens intervals between calvings**

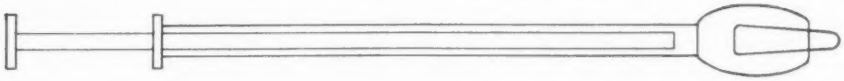
Impaired fertility in cows, commonly accepted to result from non-specific genital infection, responds dramatically to the 2-step treatment method with FURACIN. In one 3-year study involving treatment with FURACIN Suppositories Veterinary, of approximately one-half of 530 "problem breeders": "The average number of services per conception was 1.88 in the treated and 2.85 in the untreated cows. The average number of days between calvings was 385 in the treated and 447 in the untreated animals."[1]

In a study with 85 subfertile dairy cows, 61.7% of 34 treated with an intra-uterine injection of FURACIN Solution Veterinary conceived at first service, while only 19.3% of 31 treated in an identical manner with 10% saline solution conceived at first service; 40% of 20 non-treated controls conceived at first service.[2]

## *FURACIN 2-Step Method for Impaired Fertility*

**STEP 1.** During estrus, instill, aseptically, the contents of 1 to 3 SQUEEJETS (30 to 90 cc.) of FURACIN Solution Veterinary into the uterus by means of a uterine pipette.

**STEP 2.** During the following 3 weeks, insert 1 FURACIN Suppository Veterinary into the anterior portion of the vagina 3 times each week on alternate days.

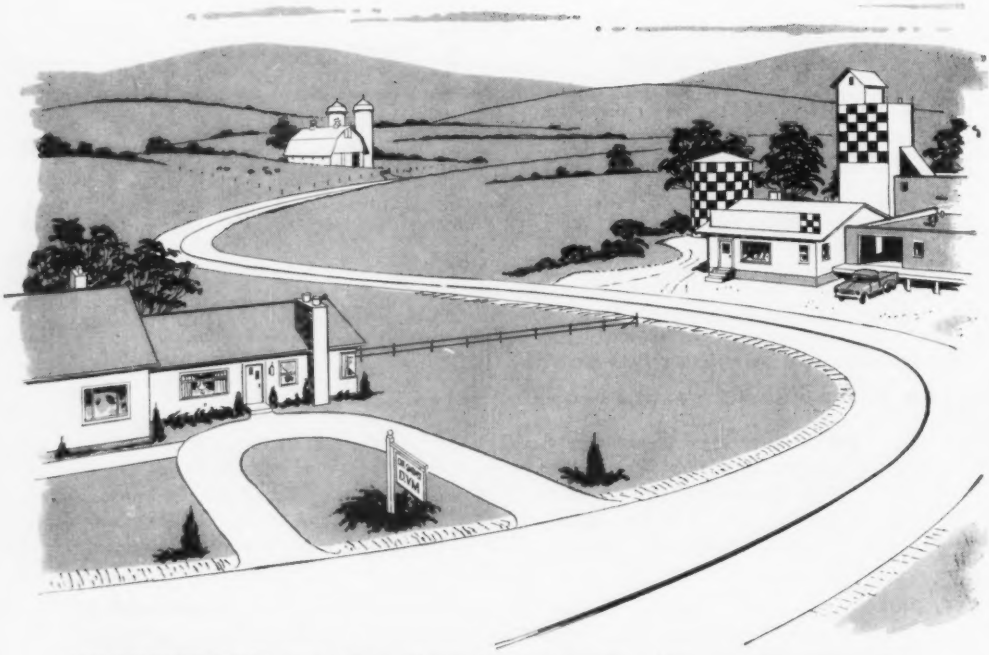


The cow may then be bred during the next estrus.

Supply: FURACIN Solution Veterinary SQUEEJET (30 cc. each), boxes of 12; FURACIN Suppositories Veterinary, boxes of 12.

1.Vigue, R. F., et al.: J. Am. Vet. M. Ass. 134:308 (April 1) 1959.
2.Vigue, R. F.: Personal communication.

EATON LABORATORIES, Division of The Norwich Pharmacal Company. NORWICH, NEW YORK




## "PARTNERS" on the Road to Better Farm Prosperity

The Veterinarian and the Purina Salesman share in a common objective, namely that of helping the American farmer attain a greater margin of profit from the animal phase of his operation. Both have a vital interest in this objective and both can render a greater service through cooperative efforts.

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Through the trained service of his Purina Dealers, the Salesman can deliver Chows that are balanced in a variety of formulations to meet practically any nutritional need. He can also supply Purina Chows that contain medicament additives within approved levels and thus have the precision required for efficiency and safety where mass medication may be required.

The Veterinarian and the Purina Salesman can make greater contributions to the prosperity of animal agriculture by traveling as "partners."

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Weberlein and associates reported on the use of SPARINE in small animal practice. SPARINE was given to 249 dogs to facilitate examination and as an adjunct to local and general anesthetics. They found that SPARINE ". . . proved to be valuable in veterinary practice. The animal benefits by its use, the client is pleased and the veterinarian may work effectively."*

*Weberlein, M.K., et al.: J.A.V.M.A. *134*:518-519 (June 1) 1959.

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AVAILABLE: TABLETS: 25, 50, 100 mg., vials of 50.
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For further information on prescribing and administering SPARINE see descriptive literature, or current Direction Circular.

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If you are reading this magazine, it's safe to conclude that you are concerned with the welfare of dogs—both personally and professionally.

Swift's staff of Research Veterinarians and Nutritionists share your interest in the good health of dogs. You can trust their concern, their care, their sense of responsibility for your dogs' nutrition to be as sincere as your own. That is why you can feed or recommend any type of Pard, with confidence.

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**PARD CRUNCHERS with Beef Gravy**
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*To Serve Your Profession Better*

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***Use and recommend PARD products with confidence.***

## Tularemia in Massachusetts

During November, 1960, a 43-year-old man apparently contracted tularemia from a rabbit found dead during a hunting trip. During the hunt the man's dog returned from a briar patch carrying the dead animal. The hunter field-dressed the rabbit at that time without gloves, although he had an abraded area on his right index finger. No gunshot wound was found in the rabbit; it had no foul odor, and the meat and viscera appeared normal.

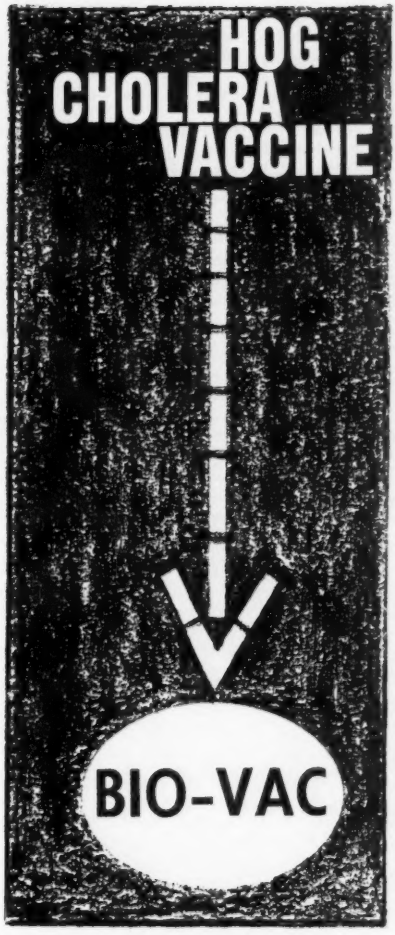
Three days later, the hunter had erythema, edema, induration of the right index finger, axillary lymphadenopathy, chills, and fever. No specific diagnosis was made initially, and he was treated intermittently with tetracycline, 1 Gm. per day. No streptomycin was included in the treatment. Symptoms became worse when the antibiotic was discontinued. On the 16th day of illness, a blood specimen was drawn and the tularemia agglutination titer found to be 1:10,240, establishing the diagnosis. Tularemia occurs only rarely in Massachusetts; a total of 11 cases were reported during the last 10 years.—*Morbid. and Mortal. Rep., U.S. Dept. of Health, Education, and Welfare, 10, (Jan. 27, 1961): 8.*

## A Public Relations Thought

Some time ago, a state medical society had at its annual meeting an exhibit which invited the members to "come in and meet the best public relations man the medical profession has." Doctors entering the booth came face to face with a large mirror.

This dramatic episode points up the fact that your concern for the welfare of your patients, your self-sacrificing service to them, and your ethical relations with your colleagues will have more weight with your public than full-page advertisements in every newspaper in the country.

It is up to you, not the professional public relations experts hired by medical organizations, to interpret the views of the medical profession to the public and to prove to them our sincere desire to give them the best medical care possible under any conditions. —*Editorial, Am.M.A. News (Dec. 12, 1960): 4.*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Bio-Vac, processed and desiccated by Bio Laboratories modern equipment, is thoroughly tested for maximum stability during storage and shipping.

Hog Cholera Serum, 10 cc. dose, is recommended for use with Bio-Vac.

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**Names of classified advertisers using key letters can not be supplied. Address your reply to the box number, c/o JOURNAL of the AVMA, 600 S. Michigan Ave., Chicago 5, Ill., and it will be sent to the advertiser.**

### Wanted—Veterinarians

We need a vet! None in Citrus or Hernando counties. Owner of racing dogs needs more room. Office, 4-bedroom house, runs, pens, and building with cages and food storage room. Outside runs with cages. $24,000. Write or call Nadine V. Hill, representing Mae Fleming, registered real estate broker, Box 62, Homosassa Springs, Fla. Telephone Crystal River, Fla., SW 5-2802.

Wanted—veterinarian interested in a career of teaching and research in anatomy, for instructorship open Sept. 15, 1961. Graduate study in gross, microscopic, developmental, or neuroanatomy. Descriptive or experimental research. Department of Anatomy, New York State Veterinary College, Cornell University, Ithaca, N. Y.

Wanted—capable veterinarian of accredited school to assist in small animal hospital in Pennsylvania. State age and qualifications. Furnished apartment available. Address Box C 70, JOURNAL of the AVMA.

CALIFORNIA STATE VETERINARY POSITIONS

Excellent opportunities in California state government in either disease control and pathology or meat hygiene for graduate veterinarians with or without experience in practice. Senior veterinary students eligible to apply before graduation. Salary range—$584 to $710. Liberal employee benefits. Write at once for further information. CALIFORNIA STATE PERSONNEL BOARD, 801 Capitol Avenue, Sacramento 14, Calif.

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Immediate openings with Minnesota Livestock Sanitary Board. Veterinarian with no experience—$5,616 to $6,828. Year or more experience—$6,828 to $8,328. Open to United States citizens eligible to take Minnesota license exam. Address State Civil Service Department, 122 State Office Bldg., St. Paul, Minn.

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Young veterinarian, experienced in small animal practice, military obligation completed, desires secure position in Chicago or suburban practice. Available about April 1. Please state terms. Address Box C 62, JOURNAL of the AVMA.

Veterinarian desires government or drug house position. Experience covers federal and state disease control and meat inspection, 15 years. Practice, army officer 4 years. Prefer South. Address Box C 59, JOURNAL of the AVMA.

UP graduate, age 29, married, desires position with future in progressive small animal practice in eastern Pennsylvania. Valuable and extensive AAHA experience. Service obligation completed in July. Address Box C 56, JOURNAL of the AVMA.

Illinois graduate, married, age 26, leaving service, desires association in small animal or mixed practice in Illinois or Missouri. Licensed. Would consider buying practice. Available in August. Address Box C 55, JOURNAL of the AVMA.

1952 honor graduate with 8 years' experience in general practice desires position in institutional, private or commercial field which affords professional and economic advancement. Address Box C 52, JOURNAL of the AVMA.

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Veterinarian, experienced in small animal practice, licensed in New York and New Jersey, is available for relief work in New Jersey and New York metropolitan area. Address Box C 9, JOURNAL of the AVMA.

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For sale—modern ranch style house, built in 1956, with veterinary clinic attached. Northern Iowa. Large animal practice—all 1 man can handle—goes with real estate. Reasonable terms. Moving because of health. Address Box C 61, JOURNAL of the AVMA.

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Would a large animal practitioner in New York, Boston, Los Angeles, or convenient routes between these cities be willing to extend his hospitality to my wife and me for a week or 10 days in exchange for a similar favor during his visit to England? Address E. E. Hughes, Esq., B. Sc., M.R.C.V.S., Woodfield, Pontesbury, Salop, England.

For sale—large animal portable hydraulic operating table. Used very little. Excellent condition. Cost —$1,500; will sell for $900. Address Box C 58, JOURNAL of the AVMA.

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Wanted—pups with cleft palate or parent dogs of such pups, for study of cause and treatment of human cleft palate. Address Dr. R. Dean or Dr. John Kelleher, c/o Mercy Hospital, 2221 Madison Ave., Toledo 2, Ohio, or call collect CH 8-6428, Toledo, Ohio.

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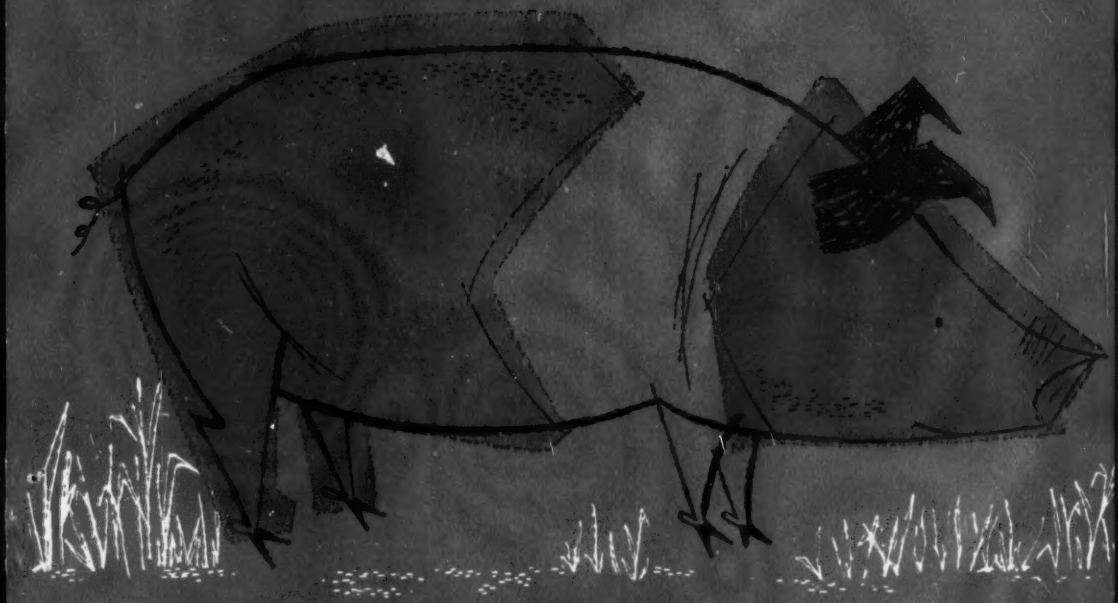

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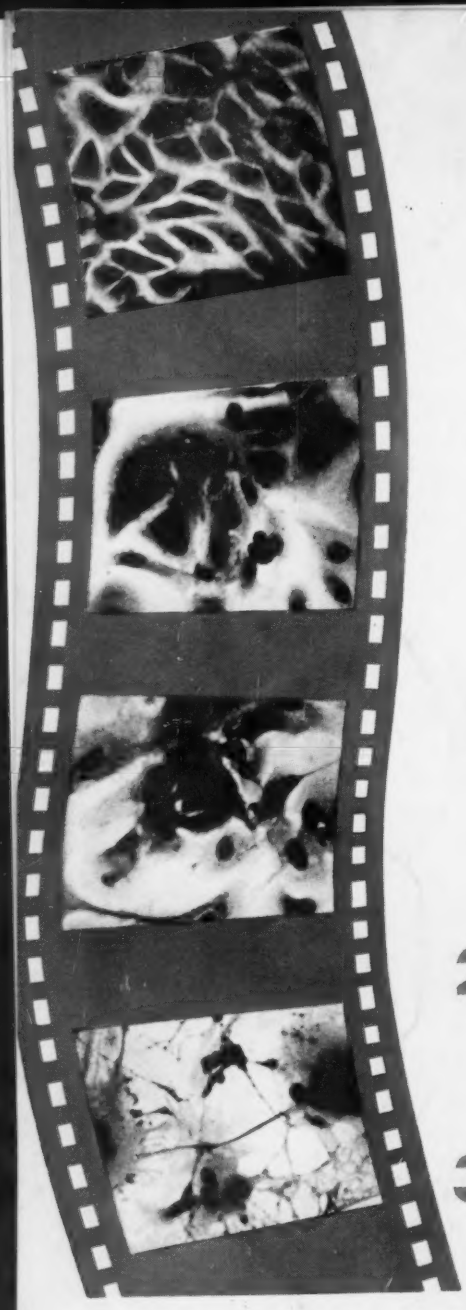

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**Cytogen:** Canine Distemper Vaccine, Modified Live Virus, Canine Tissue Culture Origin, Lyophilized . . . the first modified live virus vaccine produced on dog kidney cells.

## 1 Be sure of high antigenicity:

To the recognized superiority of a modified live virus vaccine, **Cytogen** adds increased effectiveness where it counts most . . . the strength, quality and antigenicity of the virus itself. As little as ten egg infectious doses of **Cytogen** virus protected susceptible pups from direct challenge[1]. By comparison, 64 to 250 $E.I.D._{50}$ of chick embryo origin virus are required to confer immunity[2].

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**Cytogen** contains an exclusive stabilizing agent. With this stabilizer **Cytogen** virus has successfully protected dogs from virulent virus challenge after being artificially aged for a period equivalent to fourteen months of storage at room temperature[4]. For even greater superiority **Cytogen** is held well below freezing from the time it is produced until you receive it.

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*Package:* 10 — 1 dose vials, with diluent


**Clinical and Research References:**

1. Sinha, S. K., et al, Studies on Canine Distemper Immunization with a Tissue Culture Vaccine. Vet. Med., Vol. 55, No. 4, April 1960.
2. Burgher, J. A., et al, The Immune Response of Dogs to Distemper. Cornell Vet., Vol. 48, No. 2, 1958.
3. Paton, I. M., et al, Progress in Distemper Immunization. Jen-Sal Small Animal Topics, August 1960.
4. Dept. of Biological Research, Jensen-Salsbery Laboratories. Unpublished Research Data.


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